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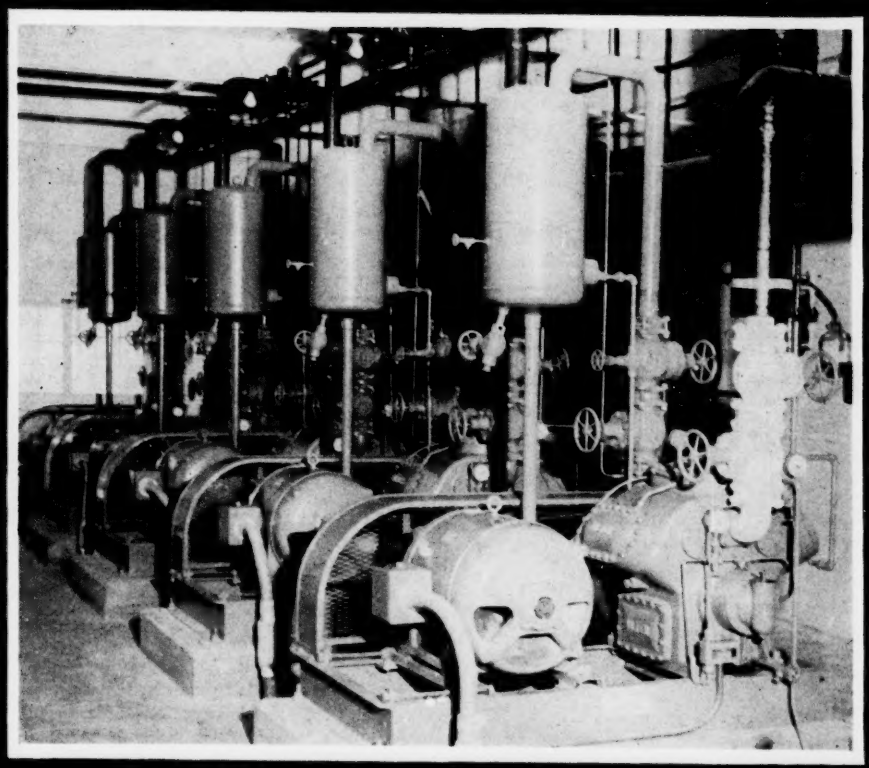
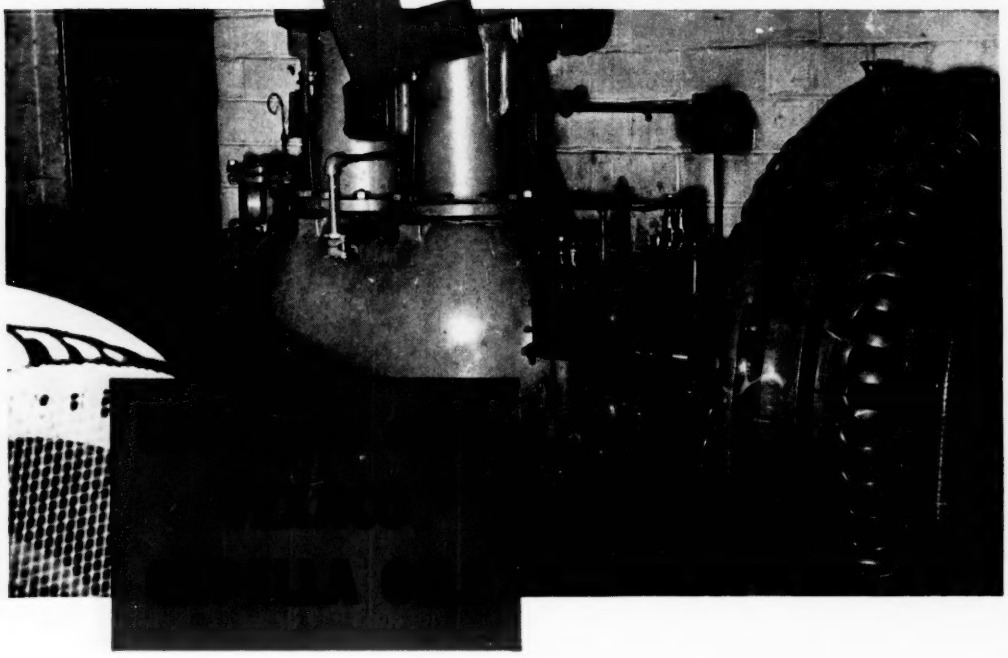


National Convention Highlights
New Ice Markets ..... Page 15

DECEMBER • 1950

New Fruit Packing Plant Opened
at Cashmere, Wash. .... Page 24

INCREASE COMPRESSOR EFFICIENCY



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VOLUME INDEX

VOL. 119 JULY TO DECEMBER 1950

A

Aberle, John W., Why Vending Stations Sell Ice (illus) Sep-27
Absolute Zero Phase, Students Explore Aug-53
Absorption System to Air Condition Skyscraper Aug-50
Advertising Council Issues Educational Publicity Dec-64
Air Conditioner Rating Standard Issued by A.S.R.E. Dec-62
Air Conditioning and Refrigeration Machinery Association Annual Meeting Jul-22
  Must Fit Installation Aug-49
  Regulations, New York Tightens Sep-17
  Water Officials Discuss Dec-61
  With Air Driven Equipment Dec-62
Alaska, Shipping Food to (illus) Sep-15
Air Distribution Problems, New Tool for Dec-66
Allen, F. W. — Expand Research Facilities for Study of Perishables (illus) Aug-16
American Ice Co. Dividend Oct-34
  Report Dec-33
  Service Report Sep-21
American Society Refrigerating Engineers Annual Meeting Nov-56
  Chicago Section Nov-56; Dec-62
  Engineers Visit Plant Aug-54
  Evansville Section Dec-62
  West Michigan Section Dec-62
  Standards Assn. Cast-Brass Solder-Joint Fittings Standard Aug-54
American Warehousemen's Association —See Refrigerated Warehousing Industry
Ammonia Uniform Control Valve Dimensions Nov-36
Apple Varieties for Pre-Freezing . . . *Katherine G. Knight and Pauline C. Paul* Sep-41
Army Will Buy Ice Nov-29
Arctic Ice Co., Plant City, Fla., — Modernization of Ice Plant (illus) Sep-19
Asheville Ice & Stg. Plant Fire Damage (illus) Sep-26
A.S.M.E. Power Show Jul-66
Association Reports:
  California Association of Ice Industries Aug-33; Nov-33
  Exhibit at Los Angeles County Fair (illus) Nov-34
  Field School Sep-30
  Canadian Association of Ice Industries Jul-39; Sep-29; Dec-37
  Advertising Sep-29
  Spring Conference Jul-40
  Cape Cod Ice Association Jul-39; Aug-33; Dec-36
  Delta States Ice Association Sep-30; Oct-48
  Florida Ice Association Sep-30
  Annual Convention (illus) Nov-32
  Engineering Short Course Dec-38
  Georgia Ice Merchandising Forum Jul-39
  Illinois Assn. of Ice Industries Sep-30; Nov-34
  Managers Conference Oct-47
  Merchandising Conference (illus) Aug-33
  Indiana Assn. of Ice Industries Jul-39; Oct-47; Dec-37
  Ice Companies Show Displays at County Fairs Oct-48
  Merchandising Forum Jul-39; Aug-34; Oct-17
  Supervisory Short Course Jul-39
  Michigan Ice Industries Association Nov-34
  Missouri-Kansas Joint Convention Dec-38
  Merchandising Forum Aug-34, Nov-34
  New England Ice Association Sep-29
  Northwest Assn. of Ice Industries Jul-39; Sep-29; Oct-48
  Ohio Accidents Reduced by Safety Campaigns Aug-34
  Ice Men Show Ice at State Fair (Illus) Oct-47
  State Fair Ice Exhibit Sep-29
Association Reports—*Continued*
  Oklahoma Secretary Aug-33
  Southwestern Ice Association—Changing Ice Market Jul-40
  Unit Secretaries Meet with Ice Convention Oct-32; Dec-35
Automatic Ice Makers, Telling the Truth About Nov-30
  Operation Cuts Operating Time (illus) *G. H. Delaureuelle* Oct-23

B

Beer Sales by Ice Plants Legalized in Austin, Tex. Sep-30
Better Seafoods — More Buyers (illus) . . . *H. C. Diehl* Jul-23
Book Reviews:
  Heat Insulation. *Gordon B. Wilkes* Oct-74
  Heating, Ventilating and Air Conditioning Guide, 1950 Edition Jul-66
  Industrial Material Handling Jul-66
  Kent's Mechanical Engineers Handbook *J. K. Salisbury* and *Colin Carmichael* Jul-66
  Refrigeration Engineering Dec-62
British Advised to Use Ice in Cold Drinks Dec-68
Burley, Orin E. — Location of Ice Vending Stations Dec-29

C

Canadian Ice Plant Opens Dec-33
Carrene "7" Higher Refrigeration Capacity Aug-56
Cashmere Fruit Growers Union—New Fruit Packing Plant (illus) *F. W. Knowles* Dec-24
Catalogs and Bulletins
  Armstrong Machine Works,—Installing Traps Dec-79
  Chicago Nipple Mfg. Co., — Folder on Pipe Nipples Aug-70
  Cyrus Shank Co., — Valve and Fitting Catalog Aug-70
  Deming Co., — Bulletin Describes Deep Well Turbine Pumps (illus) Sep-70
  Dow Chemical Co.,—New Products Dec-79
  Frick Co., — Bulletin on Multipass Ammonia Condenser Nov-70
  General Filter Co., — Bulletin on Control of Alkalinity Oct-86
  Gifford-Wood Co., — Ice Equipment Bulletins Jul-78
  Henry Bower Chemical Mfg. Co., — Bower Digest Aug-70
  Industrial Filter & Pump Mfg. Co.,—Corrosion Test Cabinets Sep-70
  International Harvester — Refrigerated Trucks Dec-79
  James Laboratories, — Sanitation Bulletin Aug-70
  Layne & Bowler Inc., — Booklet on Pumping Problems Sep-70
  Bulletin Discusses Pumping Problems Oct-86
  Lift Trucks, Inc., — Bulletin on Hand Lift Trucks Sep-70
  Universal Metal Hose Co., — New Catalog (illus) Aug-70
  Vilter Co.,—Bulletin on New Compressors Dec-79
Cathode Rays Preserve Food Without Refrigeration Dec-64
Check List Aids Engineers in Operating Analysis Oct-49
Checking Heat Exchanger Tubes with Electronic Device (illus) Nov-14
Cheese Research Develops Information on Desirable Storage Standards Sep-46
Chicken Stores Use Sized Ice Oct-43
Citrus Concentrate, Storage for (illus) Nov-21
City Ordinance Upheld Dec-34
  Products Earnings Sep-26
Clifford, L. F., — Skating on Ice in Summer (illus) Nov-23
Cold Lines and Equipment Maintained (illus) Nov-15
Concentrate Plant Uses Reciprocating Refrigeration System (illus) Aug-52
Consolidated Ice Sold to City Products Corp. Jul-35
Continental Freezers, Inc. (illus) Jul-58
Cooling Towers, Mechanical Draft (illus) *Dr. N. W. Snyder* and *W. W. Perkins* Aug-19
County Agents Learn About Icing Farm Products Jul-38
Cryostat—Super Deep Freeze (illus) Dec-27
Cundiff, Edward W., — Why Vending Stations Sell Ice (illus) Sep-27

D

Dam, Refrigeration Helps Build Oct-27
Dearing, Charles A., — Ice A Must for Fresh Fish Oct-45
Deaths:
  Bier, David B. Oct-82
  Billingsley, Geo. A. Sep-58
  Borden, Charles S. Aug-64
  Carrier, Willis H. Nov-64
  Clark, Harry H. Oct-82
  Corn, Claude Nov-42
  Culliton, Edward H. Nov-64
  Davis, C. L. Oct-82
  Denney, Lewis W. Dec-76
  Dobbins, Walter Jul-72
  Doenges, John L. Dec-76
  Doup, Herbert Carlton Aug-64
  Duffner, Bern A. Aug-64
  Edmundson, James Howard Aug-64
  Etienne, Jos. M. Jul-72
  Fraser, George W. Jul-72
  Goebel, Leonard Dec-76
  Goodson, Wm. Stuart Jul-72
  Grass, Earle C. Dec-76
  Hare, Andrew B. Jul-72
  Haven, Chas. D. Jul-72
  Heartwell, Mrs. Hattie Mae Sep-58
  Hill, John A. Aug-64
  Holl, Julius S. Dec-76
  Hyde, Glenn C. Aug-64
  Jacobowitz, Charles S. Aug-64
  Johnson, Abram O. Oct-82
  Kilbourn, Lynn Dec-76
  Mack, Emil H. Nov-64
  Marion, Peter J. Dec-76
  McCarty, F. L. Jul-72
  McCloskey, Jeddy J. Oct-82
  Olson, Louis Oct-82
  Precourt, Albert J. Sep-58
  Riordan, Michael Joseph Jul-72
  Roche, John Francis Dec-76
  Rosberg, Nels Oct-55
  Simmons, Wm. W. Dec-76
  Thompson, Wm. Sr. Aug-64
  Thurstensen, Soren Nov-64
  Weatherwax, Roy C. Aug-64
  Willard, George E. Jul-72
Delaureuelle, G. H., — Golden State Co. Ltd., New Boosters and Compressors (illus) Oct-23
Department of Commerce Recommends Ice Oct-44
Depreciation Is Costing You More . . . *Arthur Roberts* Oct-29
Diehl, H. C., — Better Seafoods — More Buyers (illus) Jul-23
Doneis, Armin — Refrigeration Helps Build Dam Oct-27
Draft Deferments for Ice Employees Prospects Indicate Tightened Labor Market Oct-34
Drug Stores Use Ice Nov-42
Dry Ice Plant Opens Oct-44
Dunn, H. Stewart — Ice Vending Stations (illus) Aug-53

E

Economic Controls Act ... Oct-28
Electronic Device for Checking Heat Exchanger Tubes (illus) ... Nov-14
Engine Room Pointers
- Ball Bearing Pointers ... Sep-40
- Bell Rings When Something Goes Wrong (illus) ... Nov-13
- How Install Suction Pump ... Sep-40
- Measuring Excavations (illus) ... Dec-48
- Natural Gas Supply ... Oct-56
- Permanent Installations Must Be Inspected ... Nov-13
- Poor Packing Does Not Pay ... Oct-56
- Standard Repairs Parts ... Sep-40
- Torque Wrenches ... Dec-48
- Use of Water by Boiler Feed Water Regulator ... Dec-48
- Using Long Handled Wrench ... Oct-56
- Value of Unbiased Tests ... Oct-56

European Engineers Compare Refrigeration ... Nov-42
Evaporating Condenser Cuts Water Consumption (illus) ... Nov-20

F

Fact Finding Conference to Discuss Merchandising ... Nov-48
Finland Office Building Air Conditioned ... Dec-62
Fire Damage in Ice Plant Reduced by Plant Construction (illus) ... Sep-26
Fish Pier—Picture Tells How to Operate ... Dec-33
- Poundage and Value Taken by Commercial Fishermen ... Jul-26

Fisheries Refrigeration Research ... Aug-26
Fishing Boat Speeds Catching and Processing ... Sep-16
- Industry—Use of Ice (illus) *Charles A. Dearing* ... Oct-45

Folkston Ice & Cold Stg. Co., Folkston, Ga., — One-Stop Icing Service for Trucks (illus) ... Nov-31
Food Associations Name Defense Committee ... Oct-63
- Poisoning Caused by Lack of Refrigerators in England ... Oct-25
- Processing Meeting ... Sep-49

Foreign Engineers Tour United States (illus) ... Sep-38
Foundation Engineering ... Nov-54
Freezing Eggs in the Shell (illus) *Socrates A. Kaloyereas* ... Nov-45
Frost Heaving Damages Freezer Floors (illus) ... Jul-41
Frozen Fish, Outlook for (illus) ... Aug-35
- Food Locker Associations Annual Convention ... Oct-67
- Orange Concentrate Increase Production for 1950 (illus) ... Oct-65

Frozen Foods ... Jul-60; Aug-51; Sep-47; Oct-65; Nov-52; Dec-59
- Apples Can Be Dehydrofrozen ... Aug-38
- Arizona Plant to Process Frozen Citrus Juice ... Oct-64
- Asparagus Pack Shows Increase ... Oct-68
- Beare Ice & Coal Co., — Freezer Storage Plant ... Oct-58
- Concentrate Plant Uses Reciprocating Refrigeration System (illus) ... Aug-52
- Cold Storage Stocks of Frozen Fruits and Vegetables ... Jul-56; Aug-40; Oct-62; Nov-47; Dec-55
- Continental Freezers Inc., (illus) . Lafayette, Ind. ... Jul-58
- Court Voids Restricted Sale of Frozen Meats ... Oct-66
- Florida Concentrate Story Told in Magazine Article ... Sep-50
- Freezer Storage Plant for Tennessee Crops ... Oct-58
- Freezing Eggs in the Shell (illus) *Socrates A. Kaloyereas* ... Nov-45
- Frozen Apple Juice Concentrate ... Jul-60
- Concentrate Grades Accepted ... Jul-62
- Concentrated Orange Juice Increases Sales ... Sep-50
- Fish Inventory ... Aug-52
- Outlook for (illus) ... Aug-35
- Production ... Aug-51
- Food Convention Announces Western Tour ... Jul-60
- Industry Plans Convention (illus) ... Oct-72
- Locker Associations Annual Convention ... Oct-67
- Split Pea Soup (illus) *Robert Reistrup* ... Nov-43
- "Golden Era" Seen for Frozen Foods ... Dec-58

Frozen Foods—*Continued*
- Home Freezing Unit ... Jul-62
- Indirect Immersion Freezing of Small Packages ... Jul-62
- Inspection Service Covers Frozen and Iced Shrimp ... Jul-62
- For Frozen and Iced Shrimp ... Aug-54
- King Crabs Provide Quality Frozen Meat ... Aug-51
- Locker Plants Popular in Western Canada ... Sep-50
- Survey Shows Number Nearly Doubled Since 1945 ... Oct-70

Market Information on Frozen Foods Nov-52
Mechanically Refrigerated Cars Provide Low Temperatures for Frozen Foods (illus) ... Dec-60
1950 Frozen Food Packs Show Big Increase ... Dec-59
Orange Concentrate Standards Revised ... Sep-50; Oct-70
Potato Glamorized as New Frozen Food Product ... Nov-54
Procurement of Frozen Foods Discussed at Luncheon ... Dec-59
Production of Concentrates Nearly Doubles ... Dec-59
Prosser Freeze Plant Speeds Processing (illus) ... Sep-47
Quick Freeze Plant for Processing Shrimp ... Nov-52
Railroads Expect Increase in Frozen Food Shipments ... Nov-54
Spinach Pack Shows Decrease ... Oct-68
Storage of Frozen Cooked Poultry and Vegetables ... Jul-60
Strawberry Developed Ideal for Freezing ... Jul-68
Ten Million Pound Freezer (illus) ... Jul-58
Warehouse for Orange Concentrate (illus) ... Oct-72
Whale Meat Frozen ... Sep-52
Zarotschenzeff Introduces New Frozen Fish Product ... Nov-54

G

Glucose Removal Produces More Stable Egg Powder ... Jul-66
Golden State Co. Ltd., — New Boosters and Compressors (illus) *G. H. Delaureuelle* ... Oct-23
Gorrie's Ice Machine Story Told in Health Magazine ... Oct-46
- Pioneer Ice Maker (illus) ... Jul-19

Grade Pupils Told Story of Ice ... Oct-33
Grocers Shown Value of Ice for Vegetables and Fruits ... Jul-30

H

Haifa (Israel) Rapid Ice Freezing System (illus) *Eugen Wilbushewich* ... Aug-13
Handling Studies Seek Reduction of Costs ... Jul-57
Hauge, Anders J., — Ice Cools Cold Storage Plant (illus) ... Oct-61
Heating and Ventilating Exposition January 22-26 ... Sep-52
Hetzler Ice Business Sold ... Nov-26
Holmes, E. P., — Water Wheels Drive Refrigeration Plant (illus) ... Sep-17
Home Economists See Why Ice is Best (Illus) ... Oct-34
Ice & Fuel — Elwood, Ind., Fiftieth Birthday ... Jul-38

I

Ice — A Must for Fresh Fish (illus). *Charles A. Dearing* ... Oct-45
Companies Cleared on Anti-Trust Charges ... Dec-34
Company Challenges City Ordinance Nov-34
Cools Cold Storage Plant (illus). *Anders J. Hauge* ... *Oct-61*
Day in Texas ... Jul-37
Dealer Brings Showroom to Customer ... Aug-30
Display at Indiana State Fair ... Aug-29
Texas Restaurant Conference ... Jul-21
Early Harvest Days on Radio Program ... Oct-46

Ice Freezing System, New Rapid (illus). *Eugen Wilbushewich* ... Aug-13
- is Tops for Foods and Drinks in Chicago Restaurants and Stores (illus) ... Oct-41

Man Gives Facts on Costs of Refrigeration ... Dec-37
- Has Problems ... Oct-35

130 Uses for ... Aug-15
Price War, Suit Over ... Aug-29
Prices Corrected ... Aug-30
Skating Rink (illus) *L. F. Clifford* ... Nov-23
- Pipe in New (illus) ... Dec-26
- Revives Ice Sports (illus) ... Dec-28

Ice Industry ... Jul-29; Aug-27; Sep-20; Oct-31; Nov-25; Dec-29
Advertising for 1951 ... Oct-33
Andrich Leaves N.A.I.I. ... Aug-30
Bulletin Outlines Accident Prevention ... Dec-33
Canadian Grocers Approve Iced Vegetable Displays ... Aug-30
Changing Ice Market ... Jul-40
Florida Training School (illus) ... Aug-32
Gorrie-Pioneer Ice Maker (illus) ... Jul-19
Grocers See Ice-Displayed Vegetables (illus) ... Aug-29
Ice Day in Texas ... Jul-37
- Exhibit Planned for Home Economists ... Jul-39
- Marketing Institute Announces New Courses ... Aug-29
- Research Continued ... Aug-31
- Sales in 1949 ... Aug-27
- Vending Stations, Location of ... Dec-29

Iced Tea Promotion ... Aug-29
Icing Fresh Meat Mechanical Cases ... Sep-30
Indiana and Illinois Field School (illus) ... Jul-36
- Ice Plants, Production and Distribution ... Oct-48
- Trains Ice Service Men (illus) ... Jul-36

Letters from Ice Men Solicit Funds for Public Relations ... Nov-25
Military Establishments, Selling Ice to ... Oct-33
More Ice Research ... Jul-40
National Association of Ice Industries Annual Convention (illus) ... Dec-15
- Convention Preview (illus) ... Sep-20; Oct-31
- Exhibitors ... Oct-32

Poultry Icing, Akron Surveys Market for ... Sep-21
Public Relations Funds, Ice Men Solicit ... Nov-25
Refrigerator Portfolios for Canadian Salesmen ... Jul-38
Sales Survey of Ice — 1949 ... Aug-27
Sanitation of Bottled Beverage Chests, Study ... Sep-21
Sized Ice Patent Suits ... Sep-30; Oct-40; Nov-27
Social Security Law Establishes Status of Ice Dealers Peddlers Nov-26
St. Louis Field School Held by Marketing Institute ... Dec-34
Summer Publicity Releases Used by Publications ... Oct-34
Survey on Use of Ice by Mechanical owners ... Jul-31; Jul-35
Sweet Corn, Icing in Indiana ... Sep-30
Study Methods of Handling and Marketing ... Sep-30
Taylor, Mount, Granted Leave of Absence ... Dec-19
Vending Stations, How to Select Sites for ... Sep-25; Dec-29
- Letter to Magazine ... Aug-30
- Making Ice Customers of Mechanical Refrigerator Owners. *O. A. Reardon and H. Stewart Dunn* Sep-22
- Sell Ice (illus) . . . *John W. Aberle* and *Edward W. Cundiff* Sep-27

Wage Hour Act Now Under Secretary of Labor ... Jul-29
- Interpretation on Ice Exemptions. Dec-33

Iced Coffee Boosts Ice Sales ... Oct-44
Icing Service for Trucks (illus) ... Nov-31
- Sweet Corn in Indiana ... Aug-30

India Prefers U. S. Refrigeration Products ... Aug-54
Industrial Lubrication Materials ... Dec-39

K

Kaloyereas, Socrates A., — Freezing Eggs in the Shell (illus) ... Nov-45
Knight, Katharine G., — Selecting Apple Varieties for Pre-Freezing ... Sep-41
Knowles, F. W., Cashmere Fruit Packing Plant ... Dec-24
Korean Invasion Changes Status of Food Reserves ... Dec-68

L

Locker Plant Survey Shows Number Doubled Since 1945 ..... Oct-70
Los Angeles Hotel to Have Complete Air Conditioning Aug-45

M

Maintaining Cold Lines and Equipment (illus) *C. B. Marting* Nov-15
Maintenance of Motors (illus) *Wm. Tiffin* Nov-17
Regular Plant (illus) *L. P. Reiss* Nov-11
Manpower Problem — How to Effect Deferment Oct-62
Manufacturers News
Acme Industries, — Elects Baldwin vice-president Oct-86
Millsom Joins Acme Industries (illus) Sep-69
Names New Vice-President (illus) Dec-80
Sales Conference (illus) Nov-69
Armstrong Cork, — Cornerstone New Laboratory (illus) Oct-68; Nov-68
Baker Refrigeration Corp., — Smith Elected Vice-pres.; Mooney Sales Manager Sep-68
Binks Mfg. Company—New Plant (illus) Dec-80
Canadian Ice Machine Co., — Stencel Advanced by (illus) Sep-69
Creamery Pkg. Mfg. Co., Board of Directors Meet at CP Factory (illus) Sep-66
Eagle-Picher Co.,—Advances Christner (illus) Sep-68
Promotes Nelson A. Blair (illus) Sep-68
Fuller Co., Distributor for Rotary Compressors Jul-78
Industrial Filter & Pump Mfg. Co., Moves to Larger Plant (illus) Aug-68
Jamison Cold Storage Door Co.,— Foreign Travelers Tour Plant Dec-80
Kinetic Chemicals, Inc., — Thompson Heads Aug-70
Manufacturers Sales & Service Corp., — Boyer New Sales Engineer Nov-70
Master Builders Co.,—Concrete Floor Repairs Aug-70
Philco Corp., — Bastian Joins Oct-86
Prager and Wissing Join S & S Vending Machine Co. Dec-38
Progress Refrigerator Co., — Hanson Represents Dec-80
Pure Carbonic Builds New Dry Ice Plant Dec-80
Refrigeration Engineering Co., — Max A. Myers Heads Reco Sales Jul-78
Suit Filed for Use of Water Defrost System Oct-86
Snell Refrigeration Supply — Hallowell with (illus) Aug-69
S & S Vending Machine Co., Prager and Wissing Join Dec-38
Vilter Mfg. Co., — Appoints Fullerton New District Manager Jul-78
Elects Directors Nov-69
Wright Chemical Corp., Appoints Scott Director of Service Nov-70
York Corp., — Beach Named Assistant General Service Manager (illus) Aug-69
Martin, S. C. — Maintaining Cold Lines and Equipment (illus) Nov-15
Materials Handling for Produce Dealers Handbook Dec-66 Aug-26
Mechanical Draft Cooling Towers (illus) *Dr. N. W. Snyder* and *W. W. Perkins* Aug-19
Engineers Meet Aug-50
Refrigerator Owners Use Ice (illus) Jul-31; Jul-35
Mechanized Icer Operating at Denver (illus) Aug-31
Melon Shipping Damage Curbed by New Crate Aug-18
Merchants Ice Company Elects Stecker President Sep-21
Minute Maid Corp. New Warehouse for Orange Concentrate (illus) Oct-72
Mitchell, Terry, — Warehouse Modernized Space and Efficiency Increased (illus) Sep-13
Modernization of Ice Plant (illus) Sep-19
Modern Fruit Packing Plant (illus) *F. W. Knowles* Dec-24
Morrell & Co., — Packing Plant Adds Freezer (illus) Jul-27
Motors Can Give Long Service (illus) *Wm. Tiffin* Nov-17

N

National Association of Ice Industries —See Ice Industry.
National Association of Practical Refrigerating Engineers . . . See Practical Refrigerating Engineer.
National Association of Refrigerated Warehouses . . . See Refrigerated Warehousing Industry.
Newark Saves Water Supply Jul-66
New England Ice Companies Merchandising Program (illus) Nov-28
New Equipment: Appliances, Machinery, Processes
Acme Industries, Inc., — New Induced Draft Cooling Towers (illus) Sep-60
Acme Protection Equipment Co., — Gas Mask (illus) Oct-84
Special Gas Mask for Welders (illus) Jul-75
Acton Products Inc., — Portable Beverage Cooler (illus) Aug-66
All State Welding Alloys—Aluminum Solder Flux Dec-78
Bacharach Industrial Instrument Co., —Cross Test Level (illus) Jul-76
Bateman Foundry & Machine Co., — New Scoring Machine Nov-66
Carrier Corp., — 2000th Centrifugal Machine Produced (illus) Oct-86
Introduces New Ice Cube Maker Dec-78
Cond-O-Therm Co.,—Maintains Pre-Selected Temperature (illus) Sep-60
Crane Packing Co., — Plastic Packing with "Tape Back" Sep-64
Crawford Fitting Co., — Fittings Stop Leaks (illus) Oct-84
Elgin Softener Corp.,—Single Tank Deionizer (illus) Dec-73
Foster-Built Bunkers, Inc., — Dry Ice Bunker (illus) Jul-76
Freezing Equipment Sales Inc., — Automatic Continuous Quick Freezer Sep-62
Frick Co., — Announces 9-Cylinder Compressor (illus) Sep-62
Flexo-Seals Standard Equipment (illus) Aug-68
General Electric Co., — Solenoid (illus) Sep-60
Gotham Instruments, — Convertible Recorder (illus) Aug-66
Goulds Pumps, Inc., — Offers New Self-Priming Pump (illus) Aug-68
Hamel-Dahl Co., — Long Sweep Angle Valves (illus) Oct-84
Highside Chemicals Co.,—New Sealing Compound for Joints and Gaskets (illus) Nov-68
James-Pond-Clark, Leakproof Check Valves Oct-84
Jamison Cold Storage Door Co., Adds New Plywood Door (illus) Nov-68
Knuth Engineering Co., — Tube Expander Jul-76
Lewis-Shepard Products Inc., — Unit Racks Provide Flexible Storage System (illus) Sep-64
Liquid Freeze Corp., — Ice Flake Machine Sep-64
Mixing Equipment Co., — Vertical Brine Circulator (illus) Nov-68
Morris Coupling & Clamp Co., Pipe Couplings (illus) Sep-64
New Instrument Measures Heat Conductivity Aug-68
Niagara Blower Co., Aeropass Gas Condenser (illus) Jul-74
Nukem Products Corporation., Nukemite Oct-34
Pantex Mfg. Corp., — Hydraulic-Pressure Electric Switch Sep-64
Pownall, George, — Prepared Ice Freezer (illus) Jul-74
Squires, C. E. Co., — Packless Reducing Valve Sep-66
Taylor, W. A. & Co., — Comparator for Corrosion Control of Coolants Jul-74
Thermo Instruments Co.,—Spot Cooling Device Dec-78
Union Bag and Paper Corp., — Packaged Ice Preserves Pre-Packaged Produce (illus) Nov-66
Wagner Electric Corp., — Cast Iron Frame Motors Enclosed Fan Cooled (illus) Aug-66
Weston Electrical Instrument Corp., — Minicorder Charts Temperature Record (illus) Oct-85
Whiting Corp., — Electric Hoists (illus) Jul-74
York Corp., — FlakIce Improvement "De-aerates" Ribbons Aug-66
New Ice (?) is Hard as Rock and Slow to Melt Oct-48
New Trial in Sized Ice Patent Suits Asked Dec-34

O

Obituary — See Deaths.
One Hundredth Ice Anniversary, Newspapers Feature Oct-34
Orange Concentrate Increases Production for 1950 (illus) Oct-65

P

Packaging Exposition Dec-26
Packing Plant Adds Freezer (illus) Jul-27
Pasco Packing Company, Dade City, Fla. Storage for Concentrate (illus) Nov-21
Paul, Pauline C., — Selecting Apple Varieties for Pre-Freezing Sep-41
Perkins, W. W., — Mechanical Draft Cooling Towers Aug-19
Personalities:
Anderson, Paul J. Honored at Party Jul-38
Andrich Leaves N.A.I.I. Aug-30
Conrades Heads Coal Group Aug-31
Appointed Dec-34
Earman, J. S. Honored Sep-26
Forbes, Lee, Delivers Ice 42 Years Nov-30
Hansen Succeeds Rowland Sep-21
Hust Forms Public Relations Firm Sep-21
Knight Moves to Terre Haute Oct-48
Lauer is Honored Jul-66
Prager Joins S & S Vending Machine Co. Dec-38
Stokell, Ralph C. Testimonial Dinner for Jul-52
Thompson, Joe C., Ice Man of the Month Oct-48
Wissing Joins S & S Vending Machine Co. Dec-38
Leaves Ebner Nov-30
Philadelphia Warehousing Cold Storage Co. Warehouse Modernized (illus) *Terry Mitchell* Sep-13
Pipe in New Skating Rink (illus) Dec-26
Porter to Direct Ice Sales for Polar Ice & Fuel Dec-38
Portraits:
Ayers, Wm. J. Dec-16
Baldwin, Guy L. Oct-86
Beach, Ralph L. Aug-69
Bell, M. E. Dec-47
Blair, Nelson A. Sep-68
Brandt, Emerson Dec-39
Branham, H. B. Oct-49
Byl, Don Nov-37
Carlson, A. R. Nov-35
Christner, Glen J. Sep-68
Condon, E. F. Dec-16
Dunphey, E. B. Dec-80
Eccleston, Frank Nov-37
Gubser, Regis Nov-37
Hallowell, Elliott R. Aug-69
Hansen, Harry Sep-21
Hanson, Ellis J. Dec-80
Jacobs, Guy Dec-17
Johnson, Elmer Nov-37
Kenagy, Leland Sep-31
McLain, H. O. Dec-15
Millsom, Carl Sep-69
Moore, Ralph Nov-37
Myers, Max A. Jul-78
Nelson, Ed. L. Nov-37
Newton, A. B. Dec-80
O'Connor, Thomas Jul-41
Orton, Wm. Nov-37
Osborn, Wm. Nov-37
Paulick, George Nov-37
Peterson, Howard Aug-43
Prager, Daniel Dec-38
Roche, J. F. Dec-76
Rushton, J. Frank Nov-33
Shanklin, A. P. Jul-22
Seeley, Lauren E. Dec-64
Steers, George, Jr. Dec-16
Stencel, R. A. Sep-69
Stokell, Ralph C. Jul-52
Taylor, Mount Dec-17
Venemann, H. G. Nov-37
Wissing, Clem B. Dec-38
Poultry Institute Moves Nov-44
Plans Field Service Program Jul-57
Packing Plant Opens New Market for Increased Ice Sales (illus) Nov-30
Practical Refrigerating Engineer Jul-41; Aug-43; Sep-31; Oct-49; Nov-35; Dec-39
Adjusting Multiple Rooms for Best Operation Aug-43
Annual Convention Announcement (illus) Nov-37
Bell, M. E. Dec-47
Check List Aids Engineers in Operating Analysis Oct-49
Claude Corn Deceased Nov-42
Columns and Floor Insulation Jul-45
Come to Annual Los Angeles Convention (illus) Nov-35
Educational Program at Convention Aug-47

Practical Refrigerating Engineer—*Continued*
Frost Heaving Damages Freezer Floors (illus) Jul-41
Herzog Honored by Power Engineers Oct-52
Industrial Refrigeration Safety Code Sep-31
King, Guy, to Santa Monica Oct-51
Membership Contest Jul-48; Aug-48; Sep-38; Oct-55; Nov-42; Dec-47
Modern Industrial Lubrication Materials Dec-39
N.A.P.R.E. Question Box ... Jul-45; Aug-44; Sep-35; Oct-51; Nov-38; Dec-41
Air Distribution Nov-38
Cold Pipe Insulation Oct-51
Condenser Liquid Subcooling Aug-44; Nov-38
Conditioning Candy Room Nov-39
Discharge Gas Coolers Sep-36
Does Oil Tend to Remain in Float Evaporators Dec-41
Float Collapses Aug-45
Heavier Condenser Tubes Nov-38
Leak Detector—No Flame Jul-46
Liquid Line Vibration Aug-44
Lube Oil, Contamination of Dec-41
Opening Ammonia System Oct-51
Parallel Operation Jul-45
Protection During Maintenance Operations Dec-46
Pump Selection Dec-42
Rain and Evaporative Condensers Jul-45
Refrigerating for Steam Condensing Sep-35
Refrigeration Holds Prices Dec-41
Rubber Gaskets Oct-52
Waterproof for Ice Tank Covers Sep-36
Nels Rosberg Deceased Oct-55
News Notes and Activities of Chapters Jul-46; Aug-46; Sep-37; Oct-53; Nov-39; Dec-43
Operating Data Book Distributed to Members Sep-39
Refrigeration Engineer for Panama Canal Service Oct-55
Safety—Removing Compressor head Aug-48
Plan Vacation at N.A.P.R.E. Convention ... Jul-44; Sep-39; Oct-54
Prevue of Annual Convention (illus) Nov-35
Pravda Assails Lack of Ice Storehouses Dec-34
Priorities on Ice Dec-33
Problems of the Ice Industry Oct-35
Produce Packers Seek Better Retail Refrigeration Dec-68
Prosser Freeze Plant Speeds Processing (illus) Sep-47

Q

Quick Cooling Plant Opened for Vegetable Growers Oct-48

R

Railroad Opens New Cold Storage Room at Produce Terminal for Perishables (illus) Dec-56
Rail Refrigeration, Talk On Aug-31
Rapid Ice Freezing System (illus) . . . *Eugen Wilbushewich* Aug-13
Reardon, O. Ashby, — Ice Vending Stations (illus) Sep-22
Refrigerated Lines Cancel Shipping Service for Orange Concentrates Oct-25
Storage Capacity, Survey of (illus) Dec-49
Transportation Costs Studied Oct-63
Refrigerated Warehousing Industry ... Jul-49; Aug-35; Sep-41; Oct-57; Nov-43; Dec-49
Apple Varieties for Pre-Freezing . . . *Katherine G. Knight* and *Pauline C. Paul* Sep-41
Cold Storage Holdings Jul-55; Aug-39; Sep-43; Oct-59; Nov-49; Dec-57
Canadian Sep-46; Nov-44; Dec-55
Frozen Fruits and Vegetables ... Jul-56; Aug-40; Oct-62; Nov-47; Dec-55
Plant Cooled by Ice (illus) . . . *Anders J. Hauge* Oct-61
Preserves Seed Corn Nov-48
Dalton Elected President Foods Group (illus) Aug-38
Dehumidifier Uses Calcium Chloride (illus) Aug-42
Eggs, Freezing in the Shell (illus) *Socrates A. Kaloyereas* Nov-45
Losses Saved by Refrigeration Nov-48
50 F Storage Temperatures for Hatching Jul-57
Eighth International Refrigeration Congress Sep-45
Refrigerated Warehousing Industry—*Continued*
Executive Committee Holds Fall Meeting (illus) Dec-54
Foreign Trade Zones Install Cold Storage Facilities Nov-44
Freezing Eggs in the Shell (illus) *Socrates A. Kaloyereas* Nov-45
Frozen Split Pea Soup (illus) *Robert Reistrup* Nov-43
Government Will Continue Buying Dried Eggs Oct-58
Grand Trunk Warehouse Builds Addition Jul-57
Gravenstein Apple, Cold Storage Study on Aug-41
Great Lakes Chapter Summer Meeting Sep-42
H.R. 8320 — New Government Lending Scheme Jul-49
Marketing Facilities for Poultry and Eggs Oct-64
Materials Handling Equipment Safety Graph Aug-38
Mechanical Handling to be Discussed Nov-47
Missouri Valley Chapter Aug-37
Monograph by United Nations Summarizes Information on Refrigeration of Foods Sep-45
N.A.R.W. First Annual Statistical Survey Aug-38
Pacific States Warehousemen Annual Meeting Jul-53
Meets Sep-45
Pear Storage Space Needed Dec-54
Philadelphia Warehouse Strike is Settled Jul-57
Protest New Government Lending Scheme Jul-49
Quick Sheet Provides News on Defense Plans Nov-48
Refrigerated Apple Trees Bloom at Convention (illus) Sep-46
Warehousing Industry Meetings Sep-42
Shoemaker Addresses Ice Cream Makers Jul-57
Storage Capacity 1949 (illus) Dec-49
Southwestern Chapter Jul-57; Dec-55
Statistics on Public Refrigerated Warehouses Dec-54
Stokell, Ralph C. Testimonial Dinner Jul-52
Survey of Refrigerated Storage Space Dec-49
Training for Retailers of Poultry and Eggs Aug-37
United Nations Summarizes Information on Refrigeration of Foods Sep-45
War Emergency Operation, Refrigerated Warehousemen Ready for Oct-58
Warehousemen Recommend Plans for Oct-57
Warehouse Convention Marks Sixty Years Public Service Oct-58
Modernized—Space and Efficiency Increased (illus) . . . *Terry Mitchell* Sep-13
Warehousemen Announce 60th Annual Meeting Nov-44
Hold Joint Meeting in New York Oct-63
Plan Industry Action Sep-42
Refrigeration Expects Higher Priority Rating Dec-66
Fruits and Vgetables—Calif. Agri. Exp. Sta. *F. W. Allen* Aug-16
Helps Build Dam (illus) *Armin Doneis* Oct-27
Refrigeration Research Foundation Annual Meeting Dec-55
Better Seafoods More Buyers (illus) *H. C. Diehl* Jul-23
Director's Office Moves to Colorado Oct-58
Oysters, Freezing and Storage of Oct-64
Research Planned on Milk and Beer Oct-58
on Cheese Develops Information on Storage Standards Sep-46
Retention of B Vitamins in Frozen Pork Sep-52
Regional Training Conference, Newark, N. J., Sept. 18-21 ..... Aug-37
Refrigerator Cars Are Needed Say Shippers Oct-76
for Great Northern Oct-74
Growers Say are Short Sep-26
Mechanized Car Icer at Denver (illus) Aug-31
Offer Quick Transit for Frozen Concentrated Orange Juice (illus) Sep-49
Pacific Fruit Express Adds 2100 ..... Oct-74
Tests Made for Lower Temperature To be Built Nov-54 Sep-52
Refrigerator Scarcity, Fairless Predicts Nov-54
Refrigerators Smuggled Into Canada Dec-68
Regional Promotion, Ice Industry Included in Oct-44
Regular Plant Maintenance (illus) . . . *L. P. Reiss* Nov-11
Regulation W Covers Credit Buying of Refrigerators Oct-39
Reiss, L. P. — Regular Plant Maintenance (illus) Nov-11
Reistrup, Robert, — Frozen Split Pea Soup (illus) Nov-43
Research on Refrigeration of Fruits & Vegetables, California Experiment Sta., (illus) *F. W. Allen* Aug-16
Project on Air Conditioning Dec-64
Restaurants Use Sized Ice Oct-41
Rhode Island Ice Companies Joint Sales Effort Oct-33
Roberts, Arthur, Depreciation Is Costing You More Oct-29
Royal Palm Expands Service Sep-26
Rupture of Brine Cooler Jul-48

S

Safety Code, Industrial Refrigeration Sep-31
Record, Industries Show Improved ... Jul-48
Refrigeration Code Approved Aug-49
Sales and Reorganizations ... Jul-72; Aug-50; Sep-54; Nov-59; Dec-74
Seafoods, Research (illus) *H. C. Diehl* Jul-23
Seeley Heads A.S.H.V.E. Dec-64
Shipping Food to Alaska (illus) Sep-15
Sidelines Can Supplement Ice Company Sales Oct-39
Sized Ice an Old Story Oct-40
in Chicago (illus) Oct-41
Patents Held Invalid by Federal Courts Nov-27
Patent Suits Sep-30; Oct-40; Nov-27
New Trial Asked Dec-34
Skating on Ice in Summer (illus) . . . *L. F. Clifford* Nov-23
Pipe in New (illus) Dec-26
Revives Ice Sports (illus) Dec-28
Snyder, Dr. N. W.,—Mechanical Draft Cooling Towers Aug-19
Speaker, Old Egyptian Custom Dries Up Aug-53
Storage for Concentrate in New Addition (illus) Nov-21

T

Temperatures Approaching Absolute Zero Produced by New Research Equipment (illus) Dec-70
Texas Utilities Sells Ice Properties Aug-31
Tiffin, Wm., — Motors Can Give Long Service (illus) Nov-17
Transport of Perishables Discussed by USDA Aug-18
Traps Insure Liquid Seal and Eliminate Power Wastage (illus) ... Aug-50
Trial of Ice Companies Delayed by Debate Nov-26
Trucks, Icing Service for (illus) Nov-31

V

Vending Stations, How to Select Sites for Sep-25
Location of Vending Stations, *Orin E. Burley* Dec-29
Making Ice Customers of Mechanical Refrigerator Owners (illus) *O. A. Reardon* and *H. Stewart Dunn* Sep-22
Sell Ice (illus) ..... *John W. Aberle* and *Edward W. Cundiff* Sep-27
S & S Vending Co. Adds Prager and Wissing Dec-00

W

Wage Hour Act Now Under Secretary of Labor Jul-29
Walker Bros. Ice Plant illustrated description Nov-20
War Emergency Operations, Refrigerated Warehouses Are Ready For Oct-58
Warehouse Modernized — Space, and Efficiency Increased (illus) . . . *Terry Mitchell* Sep-13
Warehousing Companies Form Cooperative Group Dec-55
Water Wheels Drive Refrigeration Plant (illus) . . . *E. P. Holmes* Sep-17
Wilbushewich, Eugen — New Rapid Ice Freezing System (illus) ... Aug-13
Williams Bros. Ice Cream Plant (illus) Aug-58

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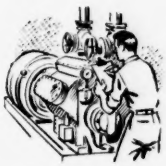

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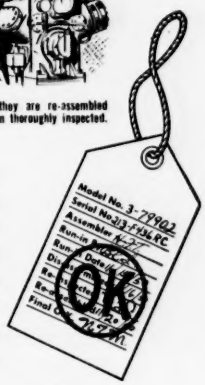

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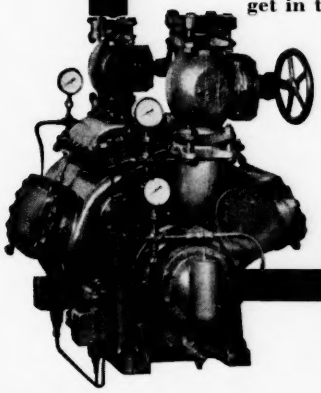

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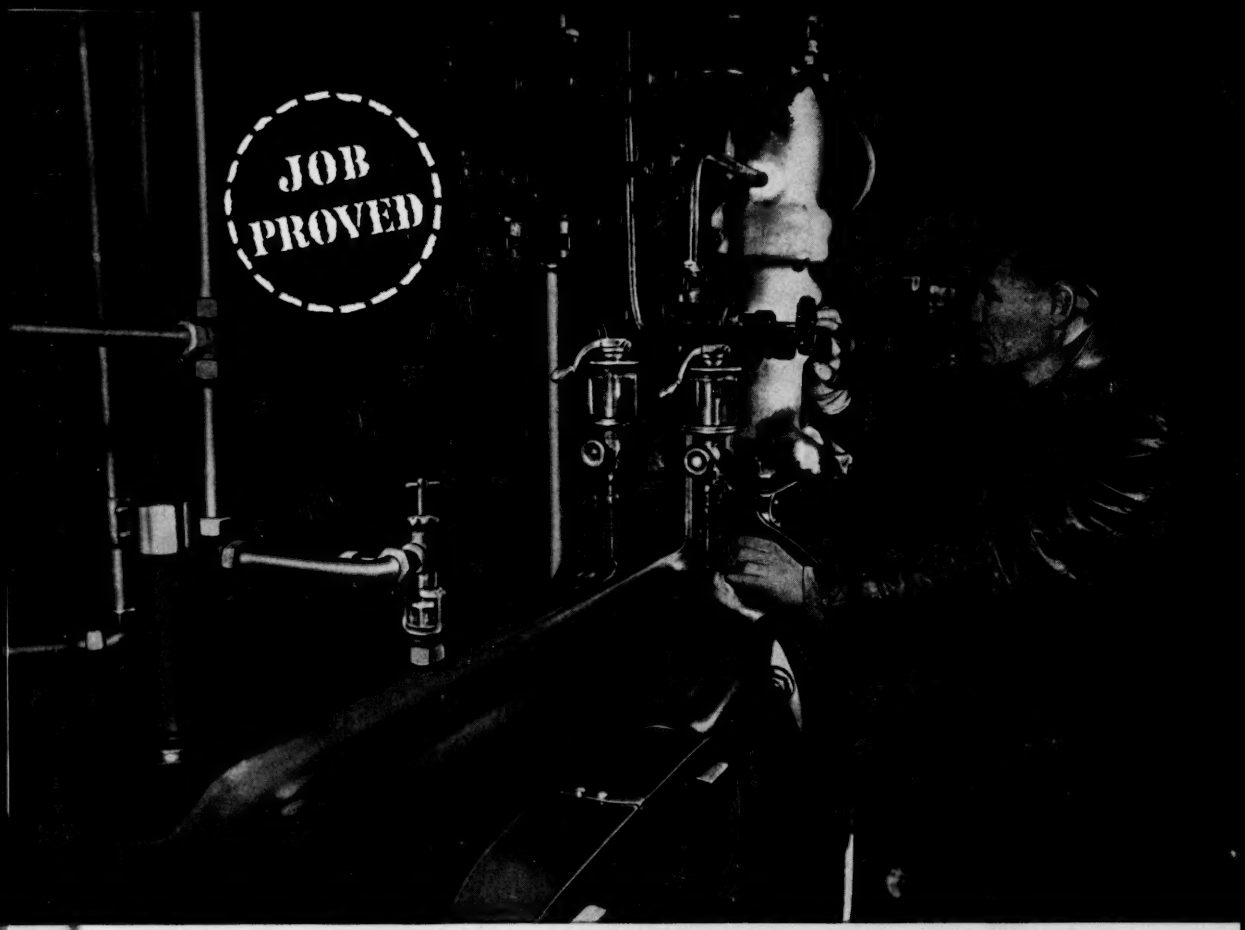

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VOLUME 119

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December 1950

CONTENTS

Cover: Ammonia Compressors, Cashmere, Wash.

National Ice Convention 15
Report of Annual Convention, National Association of Ice Industries held Oct. 31-Nov. 3

Modern Fruit Packing Plant 24
Fruit Growers Union at Cashmere, Wash. opens new plant for processing fruit

Cryostat—Super-Deep Freeze 27
World's largest deep freeze cools contents to 452 degrees below zero, Fahrenheit

The Ice Industry

Location of Ice Vending Stations 29
Bulletin Outlines Accident Prevention 33
Wage Hour Interpretation 33
Reports from Unit Ice Associations 35

Practical Refrigerating Engineer

Modern Industrial Lubrication Methods 39
The N.A.P.R.E. Question Box 41
News Notes and Activities of Chapters 43
Winners of 1950 Membership Contest 47

Refrigerated Warehousing Industry

Refrigerated Storage Capacity 49
Railroad Opens New Cold Storage Room 56
October 31 Cold Storage Holdings 57

Frozen Foods

1950 Frozen Food Pack 59
Refrigerated Cars Provide Low Temperatures 60

Departments

Convention Calendar 72
Association Directory 72
New Plants 74
What's New in Equipment 78
Catalogs and Bulletins 79
Manufacturers' News 68

BUYERS GUIDE 81

ADVERTISERS INDEX 88

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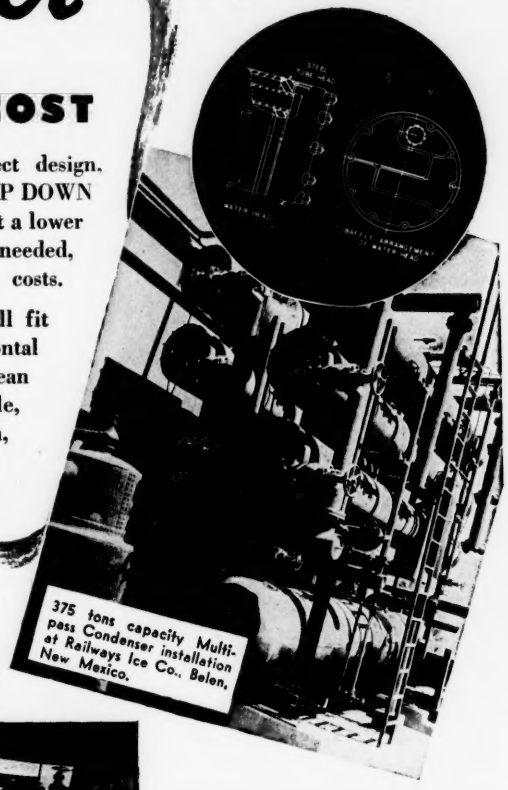

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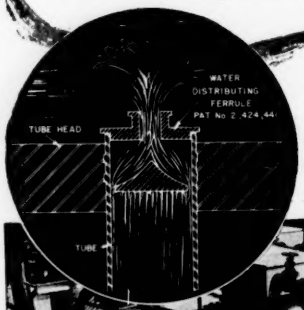

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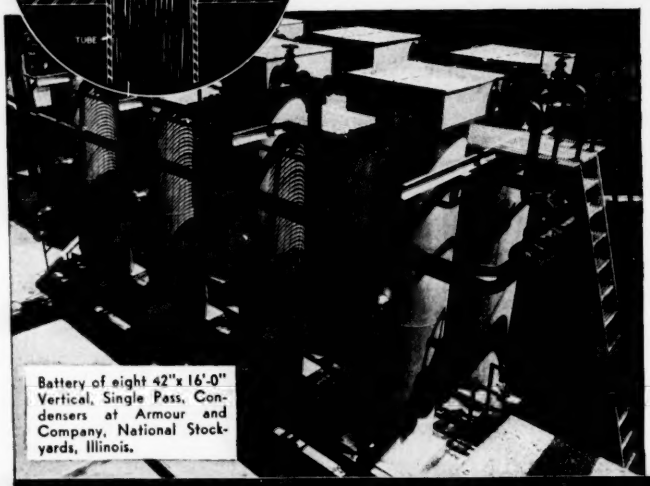

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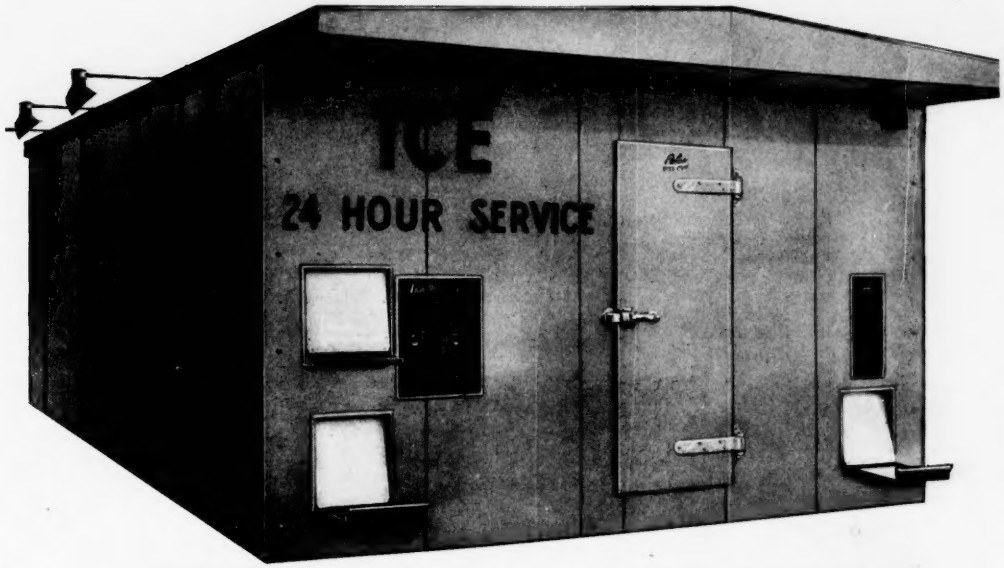

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Citizens Ice Company	2
MISSISSIPPI	
Capitol Ice Company	7
Southeastern Ice Corp.	1
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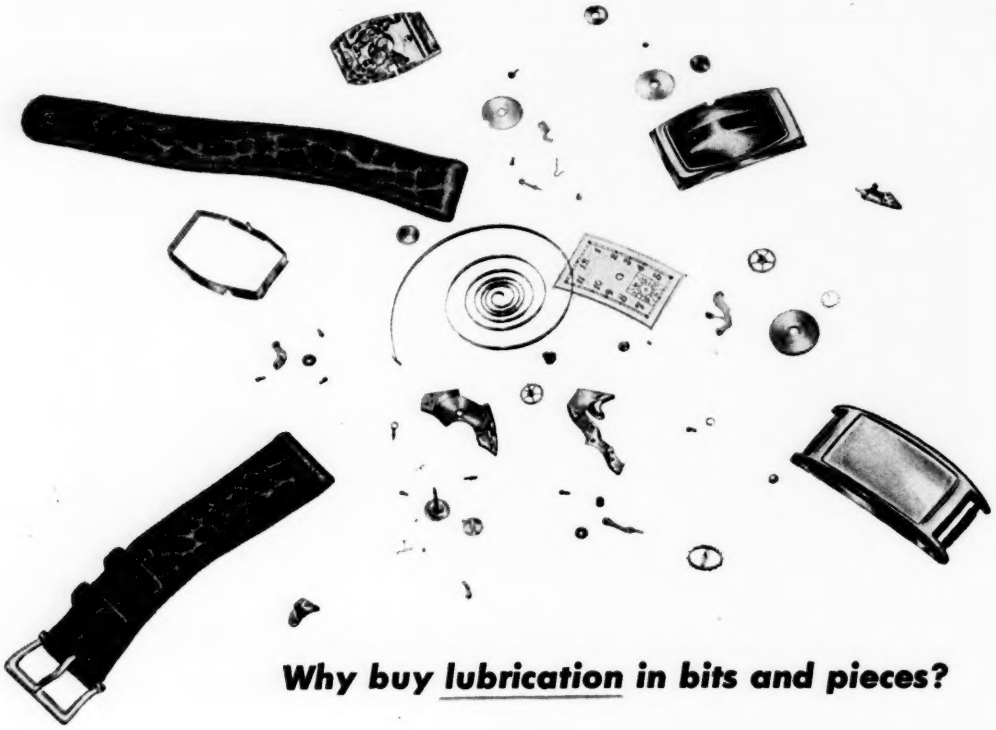

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In The Spotlight

THE NATIONAL ASSOCIATION of Ice Industries held its thirty-third annual convention at the Sherman Hotel, Chicago, October 31 to November 3. A full report with summaries of the various sessions and other activities starts on page 15.

A MODERN fruit packing plant has been opened at Cashmere, Wash., with more than a million cubic feet of cooling and storage capacity. Description and pictures of new plant are given in article on page 24.

THE WORLD'S LARGEST low temperature apparatus, reaching as low as 452 degrees below Fahrenheit, now in operation at the Massachusetts Institute of Technology will open up a vast new field of low-temperature research. See article on page 27.

ICE VENDING STATIONS, their locations, was the subject of a survey conducted this summer by The Wharton School of Commerce and Finance of the University of Pennsylvania under the auspices of The National Association of Ice Industries. Results of this survey upset some previous claims and conclusions. They are discussed and listed in the article starting on page 29.

THE UNIT ICE ASSOCIATION secretaries held their annual fall meeting in conjunction with the annual convention of the National Association of Ice Industries. For report see page 35.

REFRIGERATED STORAGE capacity in the United States has been surveyed by the Production and Marketing Administration of the United States Department of Agriculture, giving figures as of October 1, 1949. The report is reviewed in the article starting on page 49.

COVER PICTURE: View of the five ammonia compressors in the new plant of the Cashmere Fruit Growers Union. Details of the plant are given in the article on page 24. All are 6-cylinder V-type machines. Two, with 50 hp motors are driven at 600 rpm and three with 75 hp motors turn at 900 rpm.

INDUSTRIAL LUBRICATION is accomplished by the use of both oils and greases. Discussion of this subject, specially the use and characteristics of greases, is presented in the article on page 39.

MECHANICALLY equipped refrigerator cars have been placed in service by Fruit Growers Express and affiliated railroad companies, chiefly at the instigation of the frozen foods industry. Details of two types of the new cars are given in the article on page 60.

FOODS have been preserved without refrigeration as a result of bombardment with cathode rays in experiments at the General Electric Research Laboratory. For story see page 64.

AN AIR-COOLED display and delivery room has been opened by the Pennsylvania Railroad at the Produce Terminal in New York City. For pictures and description see page 56.

NEXT MONTH: The January issue of ICE AND REFRIGERATION will be a special pre-convention number for the National Association of Refrigerated Warehouses which meets in annual convention February 5-8, 1951. This issue will include the official convention program and interesting reports on important phases of the refrigerated warehousing industry.

LETTERS

What's Wrong with The Ice Business

In reply to your letter asking what we think is wrong with the ice business, we do not know the answer.

As a business there is nothing wrong with it. We feel that most of the volume loss in this section was caused by the cool and poor weather conditions of the past year. Ice sales are still much greater than ten years ago, but not as high as the peak years of 1947 and 1948.

Our loss in 1950 over the peak year of 1948 has been about 28 percent, at least half of this loss being on account of poor weather and a large drop-off in the fishing industry due to weather. The other half was due to mechanical refrigeration.

The ice manufacturers and ice dealers must realize we are in a highly competitive selling market today. It will be impossible to sit around on our laurels and still retain the ice business.

If the people in the ice industry get out and do a good merchandising job on the sale of ice using equipment and furnishing a perfect customer service with the best ice that can be manufactured in sizes people want, we in the ice business will still prosper. Without doubt it must be a highly specialized selling job from now on.

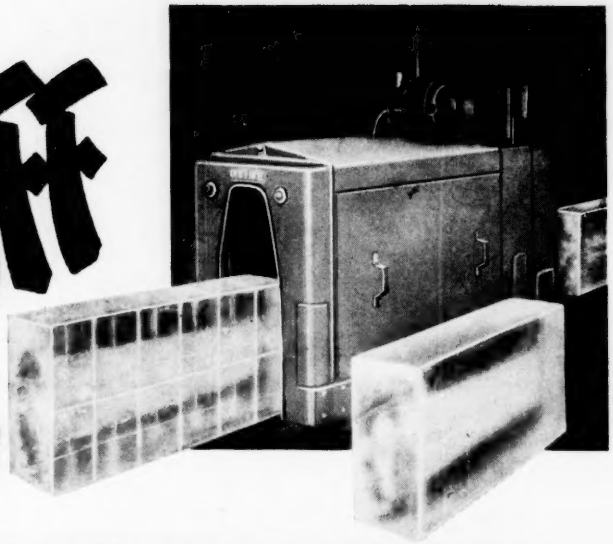
W. A. Peirce, Manager,
Red River Ice Associates

COMMERCIAL REFRIGERATION can expect to have a higher priority rating under any government-sponsored materials control program than during World War II, according to George S. Jones, vice-president of Servel, Inc. For details see page 66.

ABSOLUTE ZERO is approached in new low temperature obtained by research equipment installed in laboratories of the National Research Council of Canada. Description of new equipment and process is given in article on page 70.

THE 1950 PACKS of green peas, strawberries, and R S P Cherries show a big increase over last year according to the National Association of Frozen Food Packers. See page 59.

SCORING PAYS OFF



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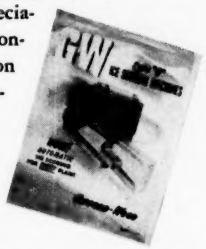
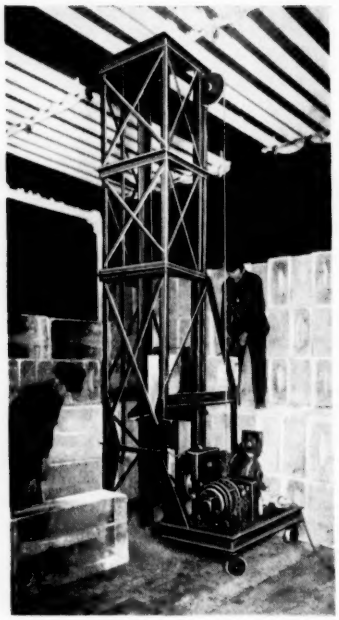


Get complete information on the UM Scorer-Conveyor from a G-W representative or write for Bulletin No. 489.



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7039

National Ice Convention Highlights New Markets for Ice

THE thirty-third annual convention of the National Association of Ice Industries held at Chicago, October 31 to November 3, took a brief look at the year drawing to a close and then turned the spot light on next year and its opportunities for developing new markets for ice. Subjects of prime importance included selling ice through vending machines; providing ice for vegetables, at the retail level and in the field; poultry icing; teaching employees how to sell; profitable side lines; results of research; and national legislation.

H. O. McLain, Chicago, Ill.
President
National Association of Ice Industries

Although total sales of ice have shown decreases over the last three years, this decrease has been confined to block ice, the sales of processed ice having shown increases during each of the three years. In this connection it was pointed out that in each case where a satisfactory job of merchandising was done, the decline in sales was nominal as compared to the general average. It was also felt that the decline in sales was largely due to adverse weather conditions.

In addition to the regular business sessions the usual convention attractions included an exhibit, the annual banquet, and other entertainment features, and group meetings.

Report on Korea

THE high spot of the convention was the concluding item on the Friday program, an address by Admiral Chester W. Nimitz of the United States Navy assigned to duty with the United Nations. Admiral Nimitz reviewed the Korean situation from the opening of hostilities to the present and paid a high tribute to the work of the American armed forces. Most of his talk turned on the aim and accomplishments of the United Nations.

Answering the universal question as to what our soldiers are fighting for in Korea, he said they are fighting for the lives of all free nations in the world against communist aggressors, by whom the stage was set in Korea to see how far these free na-

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First Vice-president, E. F. Condon, Los Angeles, Calif.

Second Vice-president, Wm. J. Ayers, Memphis, Tenn.

Treasurer, George Steers, Jr., Kalamazoo, Mich.

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Southwestern: Harry M. Park, Stevenville, Texas
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tions would go. The United Nations, he said, is fortunate in having available as commander, General MacArthur, who knows conditions in that part of the world and has full knowledge of how to meet the situation. The charter of the United Nations, he explained, opposes war but does recognize the necessity under certain conditions of armed intervention and this was one of those conditions.

E. F. Condon, Los Angeles, Calif.
First Vice-president
National Association of Ice Industries

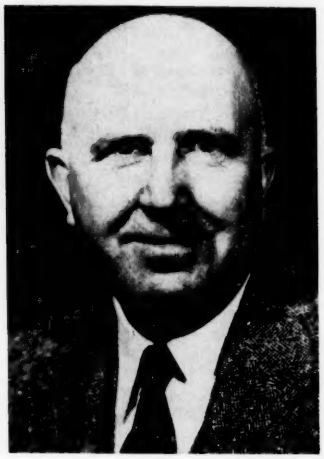
An important resolution now pending in the general assembly, which will be the first amendment, will have the effect of overcoming the veto in the Security Council. Another resolution is planned for setting up the political aims of the United Nations in Korea. This is very important in that clear political aims and plans should be devised well ahead of time. A big mistake following World War II, he said, was demobilizing our armed forces too quickly. We are in a somewhat similar period now and premature demobilization, he said, must not be repeated.

Regarding the strength and effectiveness of the United Nations, he said, he believes that this organization is now on the threshhold of great success and will continue to lead the world toward international cooperation and peace. It has taken the first necessary steps to at least postpone a general world war. If it had never accomplished anything else, this action would have justified its existence.

Among the other accomplishments in its five years, it has been active in other instances in promulgating and holding peace throughout the world; establishing the bill of rights among other nations, and establishing reciprocal trade measures. These accomplishments, he said, had not been sensational but they have been important.

Problems at Home and Abroad

ANOTHER feature of special interest was an address by Harry F. Byrd, United States Senator from Virginia. Senator Byrd reviewed and criticized the spending proclivities of the present national government. If reductions are not made in this projected rate of expenditure, he said, no tax rate which may be imposed on income and business short of virtual confiscation could produce a balanced budget in the foreseeable future.



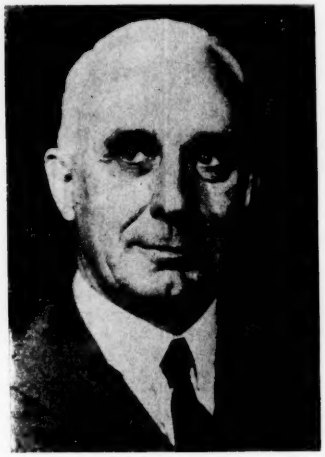
Wm. J. Ayers, Memphis, Tenn.
Second Vice-president
National Association of Ice Industries

At the rate we are going, he said, a federal budget of somewhere between 60 and 65 billion dollars a year is in prospect, without additional appropriations for any more side-show wars not the main event. It is doubtful that we could balance such a budget even if tax rates on personal and business income were increased by 100 percent over the rates we paid in the past year.

All of the deficits piled up in this quasi-war will be in addition to the existing quarter of a trillion dollar federal debt which began snowballing in the depression twenty years ago, picked up momentum when the war began ten years ago, and slackened its pace only momentarily in the five postwar years. Mounting public debt and inflation are synonymous. Mounting public debt is the basic element of national bankruptcy. The free enterprise system is impossible in national bankruptcy. Without the free enterprise system there can be neither democracy nor a republican form of government as we have known it. The alternative is socialism or worse.

The Russians know this and they are capitalizing on their knowledge of our weakness for domestic-civilian extravagance as well as their ability to extend us militarily. With their side-show wars, which they turn on and off around the globe by a flip of a Kremlin button, they keep us spending billions in remote sections of the earth. By their aggressive threats they keep us spending even more billions, tuned to a war-like pitch for the military defenses both in the United States and in the areas of our dependent allies. And they depend upon our own frailties to continue the multi-billion dollar profligate domestic-civilian programs at home.

It must be conceded that our postwar policies of the past five years have precipitated the most threatening emergency which has ever confronted us. The threat is dual; the threat of military aggression by powerful exponents of communism from without, and the threat of economic profligacy which if unchecked, can lead only to socialism from within.



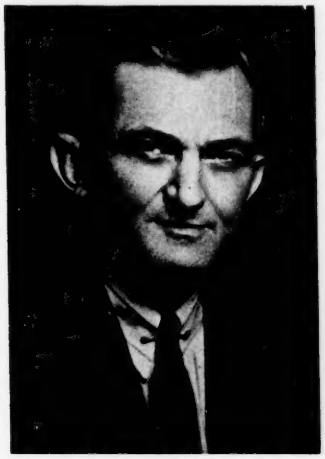
Geo. Steers, Jr., Kalamazoo, Mich.
Treasurer
National Association of Ice Industries

Caught in this encirclement of emergent circumstances it will be practically impossible to meet even the most essential requirements on a pay-as-you-go basis. The alterna-

tive is more debt. If we are to pile more debt on top of the $250 billion which we have been accumulating continuously for twenty years we must resort to this new deficit financing in a way and in a degree which somehow will not destroy the confidence of either our own people at home or our friends abroad in the integrity of the government of the United States.

Advertising Material Shown

Supplementing the Public Relations program presented Thursday, a display of National Ice publicity material was shown in the convention hall. This consisted of reprints of articles from business magazines,



Mount Taylor, Washington, D. C.
Executive Secretary
National Association of Ice Industries

home economics magazines, general magazines and newspapers. It presented a graphic illustration of the great volume of publicity about the ice business and the ice industry published during last year.

The annual president's dinner dance held Thursday evening was a great success from the standpoint of attendance, food and entertainment. After dinner, there was an entertaining floor show, followed by dancing.

Exhibits of machinery, supplies, equipment and accessories were shown in the exhibit hall. The exhibitors were welcomed and recognized in a short talk given at the opening session by Paul H. Andres, of Oklahoma City, Okla.

The National Ice Merchandising forum was held again this year, Wednesday afternoon. There was a big attendance of ice and appliance salesmen as well as managers, and the presentations and discussions brought out a satisfactory number of good selling plans and ideas.

The Unit Ice Association Secretaries met as usual with a forenoon session and luncheon the first day. Reports were made by staff members of the National Association from the national level and individual association affairs were discussed by each of the unit secretaries.

One of the unscheduled events was the presentation to Mount Taylor, executive secretary and Mrs. Taylor, of a sterling sliver service, suitably engraved. The presentation was made by the Unit Association Secretaries as a parting gift to Mr. Taylor on the eve of a leave of absence granted by the directors and in recognition of his years of faithful performance as executive secretary of the association.

Opening Session

THE first session of the convention was held Tuesday afternoon, October 31, president H. O. McLain presiding. Following the usual introductory preliminaries, the list of members deceased during the year was read by secretary Taylor. This list follows:

David B. Bier, Greeley, Colo.; Wayne C. Bowman, Akron, Ohio; Henry C. Capito, Charleston, W. Va.; C. R. Dannett, Coffeyville, Kans.; George A. Dunning, Philadelphia, Pa.; George W. Fraser, Galveston, Tex.; W. D. Goodson, Reidsville, N. C.; Hyman Greenberg, Toronto, Canada; Andrew B. Hare, Pittsburgh, Pa.; Herman B. Hausheer, LaPorte, Ind.; John A. Hill, Natick, Mass.; Otto Hoeller, Michigan City, Ind.; G. C. Hyde, Dallas, Tex.; Lynn Kilbourn, Carrabelle, Fla.; Louis Olsen, Chicago, Ill.; Carl R. Parks, Warren, Ohio; Albert J. Precourt, Manchester, N. H.; J. L. Rowland, Fayette, Mo.; W. H. Walters, Kannapolis, N. C.; George E. Willard, Doylestown, Pa.

New Members

A total of 32 new members had applied for membership in the association during the past year from 19 states. The board of directors had ratified these new members and upon motion from the convention floor, their applications were accepted.

An expression of appreciation to exhibitors at the convention was presented by Paul H. Andres, Oklahoma City, Okla. Mr. Andres called attention to the fact that these associated members in the industry perform a valuable service in producing and providing ice manufacturers and distributors with the very latest machinery and equipment for carrying on their business. Throughout the years, he said, they had developed new products and new ideas and had been of great assistance to the economy and well being of the industry. He then read a list of the exhibitors and the products which they exhibited.

Research Work

A brief report on the work and accomplishments of the Research and Engineering Department of the association was presented by C. P. Austin, director of that department. Mr. Austin pointed out that there had been and would continue to be problems in the industry and now indications are that the problems of a war economy would be added to those of normal activity. Shouldering war responsibilities, he said, doesn't mean that the industry should consider itself relieved from seeking new fields and carrying on normal selling programs.

For the past six years, he said, the association had maintained a research program, planned within the necessary restrictions of a budget. A competent research committee had

Guy W. Jacobs
Acting Executive Secretary
National Association of Ice Industries

developed a good practical program. The research activities had been relatively inexpensive but they believed they had attained good results.

An interesting phase of this work, he reported, is that they had been able to interest associated industries and educational institutions in the same line of research, with the result that expenses were shared and the ice industry got approximately four dollars worth of research work for each dollar spent.

Among the activities during the past year was the publication of a text book with information on ice refrigeration. Another work of considerable importance was the study of icing on locally grown produce which had had a very favorable reaction among grocers and distributors. A project on icing sweet corn had opened new markets for ice and this was spreading to other produce such as lettuce and asparagus. A survey among mechanical owners revealed unexpected markets for prepared ice in which it was shown that availability of ice is of chief importance.

Admiral Chester W. Nimitz
United States Navy

They are working now with a drink dispenser that will use 75 to 100 pounds of ice. Another project is that of the use of ice for displaying fresh meats. This work has just been started and it is expected that the same convincing story will be told as from the vegetable icing. Additional studies are being made on steri-cooling of fresh products including vegetables as well as poultry. The application of Ion Exchange for water treatment also is being investigated.

In the marketing of prepared ice, he said the labor cost is a big factor and the times seemed to indicate that it might be possible to streamline this process with improved machinery and equipment which will reduce the cost of production. Many ice companies he concluded, are doing research work of their own and this is highly welcomed by the department which will lend its full assets with all the assets possible to such work.

Treasurer's Report

Report of the treasurer was presented by George Steers, Jr., of Kalamazoo, Mich. Mr. Steers said that although 1950 had been a tough year, the toughest of three consecutive poor ice seasons, the major part of this lost tonnage was due primarily to unfavorable weather conditions, which was almost universal throughout the country and which had continued unfavorable throughout the year. The decline in sales this year varied from 6 percent in some areas to 35 percent in others, the small declines being in those areas where weather conditions were favorable.

The real facts are, he said, that the ice industry like many others, is in the process of turning a corner and individual ice men must really reorganize their business, perhaps even abandon their old methods to effectively cope with the new conditions. One outstanding element of the new conditions is the fact that the form of ice bought by the consuming public is rapidly changing to processed ice. This is indicated by the fact that sales of processed ice during the last three years have increased while total sales of all forms of ice have declined.

The methods of ice distribution are changing from conventional block ice to packaged ice, through vending machines where ice is available 24 hours a day. The popularity of one-trip containers is an example of many changed distribution methods. Another element is the high cost trend of delivery services which is not peculiar to the ice industry. The rising wage and truck operating costs can only be met by higher prices, and to cope with this trend, routes and customers must be analyzed to see how they can best be served and more economically.

Experience has shown that low prices will not stop the sale of mechanical substitutes either for home or commercial use. In some markets where the general ice price is lowest, the most mechanical substitute sales have been made. It is probable that unsatisfactory service to the customers may have been a compelling factor in some cases where customers discontinued the use of ice and take up with the substitute form of refrigeration.

To counteract all of this he suggested the following: Develop vending stations and packaged ice; develop use of auxilliary ice for home or recreation; make the product available when and where people want it; make the product and service good and desirable; let the price be whatever is necessary to do this profitably; advertise ice as better than any other refrigeration and worth more than it costs and as an assured quality product, always available.

Diversification is becoming increasingly imperative; diversification of ice outlets; development of new ice outlets and new markets for ice however small. The industry is lagging behind in putting into practice and developing the new markets being opened up by the Research Department.

The financial report presented by Mr. Steers showed total receipts and disbursements during the year, leaving a very satisfactory balance of total reserves.

The Road Ahead

Closing the session, president McLain brought to the convention audience a message of optimism. There is such a thing, he said, as a complement of competition. If we ever get to the point where we are not beset by competition, we will have a tendency to sink into self satisfaction and self approval. No industry of a natural product is so immune from threatening anihilation as is the ice industry. Ice as a refrigerant will never wholly be replaced. We can depend upon competition being always with the industry and if ever there comes a time when it doesn't deserve competition, then will be a time to be frightened. We all need to be alert and courageous in going ahead. We can and will offset competition and find new markets for ice. How to do this no one can tell. It will have to be done by individual ice companies.

Harry Flood Byrd, Winchester, Va.
United States Senator

The present business situation represents the highest achievement the civilized world has yet reached and we have the ability and the energy to hold to and retain these achievements. We need to know the history of our country and its political insti-

tutions. We talk about educating the rest of the world, but first we must educate ourselves. We in America have a unique and valuable asset in the ability of the American business man and the American worker and we have, and will continue, to contribute more to the progress of the world than any other factor in the business of the world today.

Second Session

THE Wednesday morning session was devoted to personnel training, legal and economic problems and an address by United States Senator Harry F. Byrd. E. F. Condon, first vice president presided and introduced the speakers.

Merchandising Skit

Opening the session was a merchandising skit. This was presented by R. C. Muckerman of St. Louis, assisted by a bridal party and a mock wedding, with hecklers from the audience adding to the suspense. Looking to the future, Mr. Muckerman said, we have the potentialities and the sales assets needed, and if we use them we will have a successful year. Before proceeding further, he was interrupted by a bridal party with a beautiful bride, three eye-filling bridesmaids and a "reluctant" groom. The wedding disposed of, Mr. Muckerman continued with the assertion that the ice industry recognizes the acceptance of mechanical ice making devices, and has met it with reliable, dependable, convenient service, making ice available when and where the customers want it. Vending machines and packaged ice are modern methods of selling ice and will bring a big improvement in the sales of ice if properly used, he said.

The Mid-Century Ice Market

Dan Prager, director of the Personnel Training and Marketing Department discussed the marketing situation as it relates to the present and immediate future of the ice industry. The world situation today has a direct bearing on all business including the ice business, he said. While the essentials of business, as usual, remains, it is more than necessary that the industry have a good product and do adequate selling.

The greatest obstacle to a better ice business, he declared, is indecision and over-caution on the part of top management. During the next year we can not depend upon a seller's market. Do not forget how difficult it was to readjust for the seller's market created by the 1st war. There are too many ice men who question the importance of selling, but without a selling effort Americans would still be bathing in wash tubs and riding in buggies.

Mount Taylor Granted Leave of Absence

THE Board of Directors of the National Association of Ice Industries at their final meeting during the convention granted Mount Taylor, executive secretary, leave of absence for two months, effective at the close of the convention. During his absence, Guy W. Jacobs will serve as acting executive secretary. Mr. Taylor has served in that position since 1935. He expects to return to active duty as soon as he recovers from a temporary siege of ill health.

Two factors affect the ice business, weather conditions and buying power. There are now 41,500,000 families in the United States and these families will have one-third more money to spend than ten years ago. He re minded the convention that while ice sales declined during the past year, the sales of other products also declined, and for next year it will take more than weather to bring the sales of ice up to a satisfactory volume. It will be more than ever necessary to use modern ice marketing information and methods to sell mechanical owners, poultry icing, vegetable icing, truck icing, and all other recognized markets for ice.

Increased Operating Costs

While ice tonnage was off 22 percent in 1949 from its war peak, labor and other operating costs had mounted continuously. This, coupled with the almost changeless price scheduling is a fundamental problem of many ice companies today. The survey of ICE AND REFRIGERATION on ice prices for 1950 published last May shows that there was a very slight upward trend of ice prices, starting in 1941 and levelling off in 1949, but it also shows that current average ice prices are merely a fraction higher than 1930, 20 years ago. At the same time during that 20-year period overall costs of operating an ice business have more than doubled.

Notice in Advance

A report on problems in the industry in relation to government and legal regulations was presented by Wm. T. Jobe, general counsel. Mr. Jobe said that they are all interested in knowing in advance what is going to happen. In some instances, he said, the answer to this question can be ascertained. One thing of which they could be sure was that, not only for the immediate year ahead, but for many more to come, business will be subject to an ever increasing amount of financial burden and regimentation.

The Defense Production Act of 1950 and other laws related to National defense probably will produce controls as thorough-going and drastic as those in effect during World War II. The manpower drain on ice company personnel has already begun in some areas through the shifting of workers to other industries and into the armed services. The long range outlook on manpower is that the problem will increase in difficulty as demands by war production and the armed services are stepped up. The draft law and regulations will be tightened. In regard to the costs of labor, prospects are for an increase and for this problem the only course open to management will be increased efficiency and higher productivity of labor, which can come only through better management techniques as reflected in better training, better supervision and better human relations.

The Defense Production Act provides in general for the stabilization of wage rates when and if prices are controlled; but there are numerous loopholes which might be found to circumvent the Congressional intent of tying prices and wages firmly together. In any event, before wage-price controls can be effected, if indeed they are, there is every prospect that wage increases will continue to be granted by large segments of American industry.

Regulations and controls affecting materials are not so important to the ice industry as those pertaining to manpower. However as the tempo of mobilization increases, they will assume more importance. Long range prospects in this connection would seem to call for the maintenance of plant equipment in the best condition resources permit.

If management is forced to pay war wages, the inescapable result is an increase in prices of its goods. If workers ask and get increased wages again the vicious spiral of inflation will go on and on. One of the most

Wedding scene in dramatic skit "He's Alive." R. W. Muckerman, the bride, the groom, bridesmaid, and spectator.

serious threats to our economy is inflation. Communism thrives on economic collapse and any failure to protect our economy under the present emergency will provide the means by which Russia can win World War III without firing a gun.

Mr. Jobe then turned to the new Wage Hour Law which became effective last January. The Ice association had been active in obtaining an interpretation of this law covering exemption of retail sales. As originally written, this exemption set up the principle that any ice sold for consumption and not for resale was classed as a local sale, thereby not coming under the provision of the Act. But as more recently promulgated by the Wage Hour Labor Board, most of the exempted benefits had been virtually destroyed. Mr. Jobe announced that a bulletin would be issued soon covering this point.

National Ice Merchandising Forum

ONE of the practical sessions of the convention was devoted Wednesday afternoon to a session of the National Ice Merchandising Forum. The session was called to order by Paul H. Andres, chairman of the Personnel Training and Marketing Department and R. W. Davis of San Francisco acted as moderator. The first part of the program at this session was given over to a discussion of new markets for ice and the second part to diversification possibilities.

New Markets for Ice

Dick Fischer of Ft. Wayne reported that while working in Akron last year, he had sold over 300 food stores on vegetable icing and these stores had averaged about 100 lbs. of ice a day. Coming to Ft. Wayne early this year, he had found mechanical produce cases predominating. In a few stores he started by reconverting some of these mechanical cases for ice. As this proved successful, some of them began purchasing ice cabinets. They had found best results from selling the grocers and wholesalers on the use of ice who, in turn, would pass the information and advantages on down to the retailers. Mr. Fischer said that they had been very successful in selling the idea in Ft. Wayne and he felt sure that their results will increase the use of ice.

Jack Wightman of Akron, Ohio, told about their work in selling poultry icing. They started with a survey of 100 food stores which sold poultry. They had started with tests on a small ice chest and results of these tests were shown to these food stores. Up to the present they have installed 5—5 ft. cases and 2—3 ft. cases and about twenty stores are using ice in their mechanical cases. This is only a start on a large market, Mr. Wightman said, and they expect to greatly increase their sales after a few months' work. As one example, he cited a grocer who had increased his poultry sales more than 500 percent after installing an ice case.

Leonard Swartz, Indianapolis, gave some information on their use of ice vending machines. His company installed its first vendor two years ago and now has ten such machines in operation. The successful ice vending business requires a sufficient number of such vending stations to justify existence of a crew needed to service them. Most of their stations were located in conjunction with filling stations. The ice is sold on a wholesale basis to the filling station. Mr. Swartz said their experience was that vending stations will sell a large volume and in most cases, sales at each station are increasing.

Mrs. Harriett Gray of Indianapolis discussed the sale of ice punch bowls and carved ice pieces used as center pieces for table decorations. They had had a good demand for these for wedding receptions and other social affairs, sales being made through a florist. Various shapes and sizes of punch bowls are available, from the modest molded bowls to those specially hand carved. Small pieces also are available, such as birds or animals carved in ice, but the mainstay of this business are the punch bowls and several hundred of these have been sold during the last few months. Mrs. Gray commented that they get a good price for these items and they also serve to advertise the ice business.

Paul Hoff, Milwaukee, Wis., reported that a large commercial canner in his territory each year has a large surplus of beets and carrots which are put in cold storage and a considerable quantity stored in the field under temporary shelter. Cold storage is a costly process and storing in the field without adequate refrigeration always brings considerable loss. Mr. Hoff's solution is to provide this concern with an iced floor and then cover the vegetables with a blanket of snow ice. Normally this concern has about 6000 tons of surplus vegetables and storage in the field eliminates high trucking costs to and from cold storage houses and also storage expenses. Mr. Hoff suggested that there is a sizable market for ice producers in territories where large vegetable packers operate.

Diversification

Turning to the subject of diversification, a number of ice producing representatives offered practical side lines that had resulted in moderate but adequate profits, not only providing additional income but in many cases providing employment of the regular ice plant personnel during slack seasons.

Conrad J. Romberg of Gainesville,

Ga., said that small town ice plants such as theirs has limited sales opportunities. To meet this situation they had installed a complete line of appliances including electrical equipment of all kinds. They had started selling ice appliances in 1930 but found that it was not sufficiently profitable so they had added other appliances including electrical washers, mechanical refrigerators, and a considerable line of other appliances. This appliance department employs one outside salesman who works with the route man, and the route men are allowed commissions on sales.

Alex M. Hill of Little Rock, Ark., explained that he is located in a section where there is a lot of good fishing. His company started in a small way selling minnows and other bait, and gradually added other fishing equipment including pails, tackle, outboard motors, and ice chests. All of this merchandise is handled with no extra help and provides a very profitable sideline and helps to sell ice to the fishermen who want to preserve their catch on the drive home.

Thos. Rogers of El Paso, Tex., described the business of selling bottled drinking water set up by his company. This business was started some years ago when the ice plant was using distilled water. Later they discontinued the selling of distilled water and now sell a line of clear spring water. They now have two routes delivering this water exclusively.

S. M. Udden, operating small ice plants at Pleasanton and Falfurrias, Tex., has installed a line of groceries, including such items as milk, frozen foods, ice cream, bread, and about 300 other items in a glass front cabinet on the end of the sales platform. Customers can drive up and buy these items without leaving their car, one of the ice plant employees carrying the items to the car and collecting. It had proved very profitable. Now he has an 18 ft. glass front cabinet and two frozen food cabinets, all with glass fronts showing plainly each of the different items. Sales last year were about $10,000 and he expects this figure to grow to $12,000 in 1951. He gets an average mark-up of about 22 percent and carries an inventory of about $2200.

Cooper H. Andres, Tyler, Tex., told about merchandising nursery stock inaugurated by his company. They started first with rose bushes and gradually other shrubs were added. Their nursery stock is received the latter part of January and the selling season runs through February, March and April. Their regular ice service men are used as salesmen. They carry high quality nursery stock and all bushes are guaranteed. The mark-up is about 50 percent.

John Glenn, Beardstown, Ill., said that instead of pushing one side line, his company is operated on the plan of establishing specific divisions including ice, coal, frozen foods, lockers, tires and appliances. Local employees are used exclusively and they are trained specially for the particular department in which they work. Such an arrangement, Mr. Glenn said, provides season-around jobs for all the employees, since seasonal employees can be shifted from one division to another. In addition it sets up a bulwark against changing conditions, stabilizes the company's income, adds desirable prestige, greatly reduces the overhead, and provides a valuable service to the community.

Miss Dorothy Ban Dyk, seated on a throne of ice, is crowned Miss Ice Queen of 1950 by Harold O. McLain, president of the National Association of Ice Industries.

Third Session

THE third session was conducted Thursday morning by Wm. J. Ayers, second vice-president. This session covered the work of the Public Relations Department and a prevue of National ice advertising for 1951.

The report of the nominating committee naming directors of the association was presented by F. W. Beazley, Jr., Dallas, Tex. The officers and directors nominated and elected are listed on the first page of this convention report.

Public Relations in Action

Report on the work of the Public Relations Committee was presented by E. L. Gunn, Jr., Atlanta, Ga. Mr. Gunn said that last year they had promised a tremendous anniversary advertising program. He believed they had kept that promise, as proof of which he described some of the highlights of the 1950 advertising and publicity campaign which included 10 full-color advertisements in national consumer publications; 160 advertisements in 27 commercial publications; 8 page insert in the Grade School Teacher to reach school teachers and students; exhibits of ice at National conventions; exhibits at the American Economics Association meeting; newspaper publicity; advertising by cooperating industries such as the Swift poultry national advertising campaign; general magazines and a number of commercial publications on the use of ice service. The circulation of ice information in newspapers approximated 12 million 500 thousand; in consumer magazines 15 million; in trade papers over 2 million.

The 100th anniversary he said, was celebrated with publicity in 29,500,000 ice-selling messages to every corner of America. Add over 20,000,000 circulation of publications which carried our advertising; add the efforts by local ice companies, the use of singing and other radio commercials,

the network radio coverage released by the Public Relations Department, the showing of "Naturally Yours" before civic groups, the participation in other trade exhibits and conventions, and you see the picture of a hard-hitting organization—Ice Public Relations in Action, he concluded.

Take a Tip from Tea

Members of the ice industry were advised to take a leaf from the tea industries' experience in merchandising by Robt. B. Smallwood, president of Thos. J. Lipton, Inc. Mr. Smallwood said the tea business had saved itself by industry-wide promotion. He described the basic ideas of the tea campaign and told how it had increased sales.

Tea, he said, was at one time the favorite beverage of the American people, having the market entirely to itself but that was back in the days of the colonies and at that time consumption was somewhere near 10 lbs. per person annually, but for various causes it declined so that throughout the nineteenth century, tea consumption in America per person ranged between a pound and a pound and a half per person per year and up through the 20's into the 30's, consumption continued to drop gradually, reaching a low point of about one half pound in the middle of the 30's.

At this low ebb, industry selling was discovered by the industry and it was acted upon. At first cooperative efforts were sporadic and faulty. Results were indifferent. There were more skeptics than believers. In 1949 a group decided to do something about it. As chairman of the tea council, Mr. Smallwood said, he announced that the industry would raise a fund of one million dollars. A few in the industry asked him to retract that statement, which had no basis except his belief that it could be done. The campaign went on and the result was that working together those interested in the sale of tea put together a fund of one million 600 thousand dollars and the promotional campaign was underway.

To administer this fund, the tea council was formed with American and British representatives having equal representation. The advertising campaign, stressing the chief selling points of tea brought almost immediate and immeasurable results. The wholesale and retail movement of tea for the six months of this year increased eight percent over the corresponding period of 1949 and imports the first nine months of this year are up 13 percent over the same period of 1949.

The 1950 National Ice Advertising Campaign

Under direction of Wm. H. Schneider of Donahue & Coe, advertising agency, Lew Kaufman gave a prevue of the advertising plan for 1951. An important part of this campaign, Mr. Kaufman said, would be advertising in commercial publications. These publications, he said, are not glamorous but they are very important since they thoroughly cover certain industries which use a large volume of ice. The fields reached by the publications will include beverage cooling, retail food stores, and fresh fruits and vegetables. These three fields will be blanketed with continuous year-round advertising in 28 publications. Samples of this series of advertisements were then shown by graphic display and slides of representative advertisements.

Mr. Schneider then continued with a description of the consumer advertising to be used, through which it is planned to present the story in the most interesting manner possible. Last year the story was pointed to processed ice, such as party ice and this year the same theme will be continued and will include sales to mechanical owners. A total of 45 advertisements will be used in Life, Time, The Saturday Evening Post, Ladies Home Journal, Good Housekeeping, Woman's Home Companion, McCalls and Better Homes & Gardens. These magazines will have a circulation of 29 million copies.

The presentation was concluded with a series of slides showing sample advertisements to be used. One of the departures this year will be the use of more frequent advertising space in which "memo" and "cartoon" devices will be featured.

Public Relations Plan and Organization

An outline and discussion of the organization and finances of Public Relations activities was presented by Guy W. Jacobs, director of the Public Relations Department. Mr. Jacobs explained that the new rate of 1½ cents per ton, reduced from the rate of 3 cents last year had been designed to bring in ice companies who felt they could not afford to pay the former rate. In this year's campaign Mr. Jacobs said that they want to bring in all ice companies as participating members because they will all benefit and, with the broader base there will be, they hope, wider interest among all ice companies.

This decreased rate, he emphasized, will not bring a corresponding decrease in the value of the advertising program. The coverage will continue as before but with a different slant. They expect to obtain the same publicity results because of the background of previous publicity and because the association has skilled publicists who know how to get all the publicity possible out of a favorable situation.

In addition to magazine advertisements, Mr. Jacobs reported, they expect to obtain valuable promotion through newspapers, radio, trade magazines and exhibits at local conventions and shows. The series of chain letters inaugurating the fund-raising campaign, Mr. Jacobs said, had already met with encouraging response. Some companies have subscribed who never did before and many old subscribers have met their pledges. Later, the usual personal contact will be made to contact those who have not yet subscribed. He urged all ice men to participate in this program bceause, he said, they will all benefit from it.

Business Outlook

J. A. Livingston, financial editor of the Philadelphia Bulletin, gave an interesting talk on the business outlook. Defense expenditures amounting to 30 billion dollars a year by next June have and will bring to the United States the biggest industrial boom in history, he said. Employment is at a peacetime high, industrial prices are higher than at any time since 1920, farm prices are rising, and the prices of food next year will climb to an all-time high.

If prices and wages continue up and up—without interruption—by the November 1952 election the administration will have a fast-moving inflation on its hands. Probaby wage and price controls will have been invoked. The administration will thereupon incur the displeasure of a great many Americans who fear all-out controls in peacetime. President Truman and his advisers will be accused of failure. That will be good Republican ammunition.

Not only that, but millions of Americans who have savings deposits and who own savings bonds will be discontented. In the last ten years, the purchasing power of the dollar has dropped to 58 cents. A man who bought a savings bond in 1940 would get back today—even adding in the interest at 2.9 percent—only 77 cents in purchasing power.

For the long term, the business outlook certainly is good. The country came out of the war with record-breaking demand for homes, autos,

new plants and equipments, apartment houses, electrical appliances—anything you can think of. The earning power of workers has been greatly expanded. The standard of living is rising. Just when it seemed possible that we could have a slump, because of temporarily diminished demand for housing and autos, the defense boom came along.

For business men, the dominant point is that taxes are going to mount higher and higher. They may find themselves talking, once again, of profitless prosperity. I doubt whether earnings in 1951 and 1952 will be as high as in 1950. But, after all, the risks of doing business are less. Government spending virtually assures full employment and full markets. That also is part of the new normalcy.

Fourth Session

THE fourth and final session was conducted by president H. O. McLain Friday morning. Mr. McLain opened the session with a verbal report on a meeting of the board of directors held the previous meeting. At this meeting association dues were established the same as last year—6 mills per ton—except that they are to be based on 1950 sales. The same executive committee as served last year and the same officers were re-elected. These officers and members of the executive committee are listed on the first page of this convention report.

Because of temporary ill health, Mount Taylor, executive secretary, was granted a leave of absence of two months. In this connection Mr. McLain called attention to the beautiful sterling silver beverage set presented to Mr. and Mrs. Taylor from the Unit Association Secretaries.

Report on Research Projects

Reports were presented on two important projects conducted under the auspices of the Research and Engineering Department—icing sweet corn and locating vending stations. These two subjects were presented by C. P. Austin, director of the Research and Engineering Department. Mr. Austin explained that these two projects had been started and completed this year.

Sweet Corn Icing

A report on the study of sweet corn icing made in Ohio and its results was presented by J. L. Glass, Middletown, Ohio. The Ohio Association for two years, he explained, has cooperated with Ohio State University in the use of ice for preserving vegetables. These studies were made only for locally grown produce for sale locally. Over the years, truck farmers and grocers have never felt that produce grown for local markets needed special attention. They relied on prompt movement of the perishables from farm to store and from store to consumer, assuming that precautions which have become accepted practice in the preparation and shipment of fresh vegetables across the country, have no place in their operation.

The experimental work on sweet corn icing is ahead of the research on most of the other commodities in this field. This product logically came first because of its very perishable nature; its widespread availability; its universal acceptance; the customer's desire for sweet, fresh, tender corn when it is in season; and the very fact that much of the summer sweet corn offered in retail stores, although grown on farms near the city, is neither fresh, tender nor sweet.

The Place of Ice

Information developed on corn in connection with its shipment to distant markets furnished the background material. It was not, however, until the industry began its research in this field that the real significance and possible place of ice in the local handling of this commodity was understood. It has been generally recognized that if field freshness and the desired edible qualities of corn are to be protected for the consumer, temperatures as low as 40 to 50 F must be maintained. At higher levels, sugar content disappears rapidly.

In those areas where research has been conducted to find out how ice can be adapted to local methods of handling corn, much interest was shown. The growers have been prompt to appreciate the value of ice. There was a problem in developing economical and efficient methods of doing the job. When corn is handled in bulk, layer icing and top icing of trucks is recommended. When handling in bags, ice is placed between the layers of bags and over the entire load. Some use also is made of hydrocooling to remove field heat. For corn packed in crates, package icing has been found to be effective. Best results are attained by placing 2½ dozen ears of corn in a crate and covering it with 10 to 12½ lbs. of crushed ice, then another layer of corn and another layer of ice.

The figures on sales of iced corn make an impressive story, Mr. Glass concluded. These sales are two or three times the volume of corn sold from dry displays and grocers are able, without any difficulty, to get premium prices.

Factors in Location of Ice Vending Stations

Report on the study of factors in the locations of vending stations was presented by Dr. O. E. Burley of the Wharton School of Commerce and Finance, University of Pennsylvania. This study was sponsored by the Research and Engineering Department, with the cooperation of three vending machine manufacturers. Announcement that this survey was under way was made in the September issue of ICE AND REFRIGERATION.

One of the primary facts shown by this survey was that high sales volume stations as compared to low volume units derive less of their sales from general home users and thus sell less block ice. High volume stations, on the other hand, sell a higher percentage of packaged or prepared ice for special occasions. Forty percent of the block ice users in high volume stations use ice for general household purposes as compared with 55 percent for the low stations.

The minimum distance which customers will travel to purchase ice is about 1.5 miles for prepared ice and slightly less for block ice. An important factor is that signs, advertising the station, or the station itself, must be of sufficient prominence that it can be seen by traffic during the peak evening movement. Fifty percent of the ice sold falls between 4:30 and 8:00 p.m. and for that reason proper lighting is very essential. One of the best means of advertising for any establishment is a sign denoting its presence. Fifty-four percent of the high volume stations had signs over the street while only 22 percent of the low volume units had such signs. The need for parking space is important and all but one of the vendors studied provided for some form of off-the-street-parking.

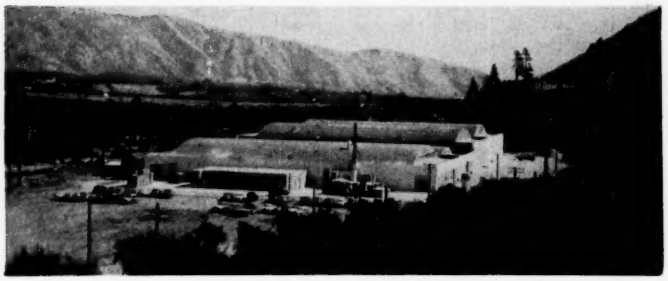
No Effect on Ice Routes

Contrary to the claims of some ice men this investigation disclosed that location of a vendor has an effect on ice routes. Ice men in some cities are considering elimination of uneconomical delivery routes by placing vending stations in the area to serve the customer. Such reasoning has merit, but it should be remembered that a car or some type of transportation is necessary and people who do not have means of getting the ice to their homes will find themselves without service.

MODERN FRUIT PACKING PLANT

Cashmere Fruit Growers Union opens new plant for packing, pre-cooling and cold storage of apples and pears with more than a million cubic feet cooling and storage capacity.

F. W. KNOWLES



This general view of the Cashmere Fruit Growers plant and the Wenatchee River Valley shows the extent of the new plant facilities.

As harvest time approaches in the Wenatchee Valley, the pear and apple growers keep careful check of the advancing maturity of the fruit. When the harvesting begins it is rapid, large volume activity. The picking, packing, cooling and storing operations are scheduled to produce fruit of the best quality at time of marketing.

The packing and storage plant described by Mr. Knowles is designed to obtain this rather precise result. At the same time reliability and economy of operation are equal objectives and features of the plant that contribute to these ends.

ONE of the nation's largest and finest plants for the packing, precooling and cold storage of apples and pears was put into service September first. Two packing lines give a capacity of 1200 boxes an hour. The cooling and storage rooms with more than 1.2 million cu. ft. of net space are rated at 30,000 box input per day.

The Cashmere (Wash.) Fruit Growers Union suffered a disastrous fire in 1949, forcing them to seek elsewhere the space for the storage of the 1949 apple crop in other plants throughout the Wenatchee Valley. Plans were prepared by Knowles and Callender Engineering Co., Seattle, for the new buildings, and contracts were let in March 1950—the plant to be in operation to receive the 1950 crop. A somewhat belated fruit season enabled the contractors to have the entire plant ready when the fruit started to roll into storage.

Building Construction

Built of concrete and heavy timber for a completely palletized operation, the plant consists of two cold storage buildings, a packing building and a segregation or common storage building.

The two cold storage buildings are each 120 feet wide, 240 feet long and 21 feet clear to the bottom chord of the trusses. Each building is divided into two rooms. Timber trusses spanning the 120 ft. width were used throughout. The Packing Building is likewise 120x240 ft., but it is only 14 ft. high to the bottom chord of the trusses. The Segregation Building, located between the Packing Building and Cold Storage Buildings, is 70 ft. wide and 240 ft. long and is also 14 ft. high to the trusses.

Many innovations not commonly used in fruit warehouses are incorporated in this plant.

Construction Features

Floor insulation in the cold storage buildings consists of 9 in. of pumice concrete on well drained and packed soil. Over the pumice concrete is a 5 in. reinforced concrete floor. A series of thermocouples placed in the floor and in the earth beneath give a temperature difference above and below the pumice insulation of approximately 30 degrees F. Further tests are being made to check these earlier readings.

Refrigeration in the cold storage rooms is by circulated air from built up units and ducts located overhead in the truss spaces. No floor space whatever is used for refrigeration equipment, all of which is installed above, entirely outside of the operating area.

Duct openings are round and are of the scoop type with air turns on the inside of the main duct and a special outlet on the delivery end. This air outlet has adjustable louvres to stratify the air delivered. The outside portion containing the louvres is adjustable through a complete circle, permitting air to be directed to where desired.

Side wall insulation is 4 inches of sheet cork placed directly against the concrete walls and supported by nailing strips anchored in the walls.

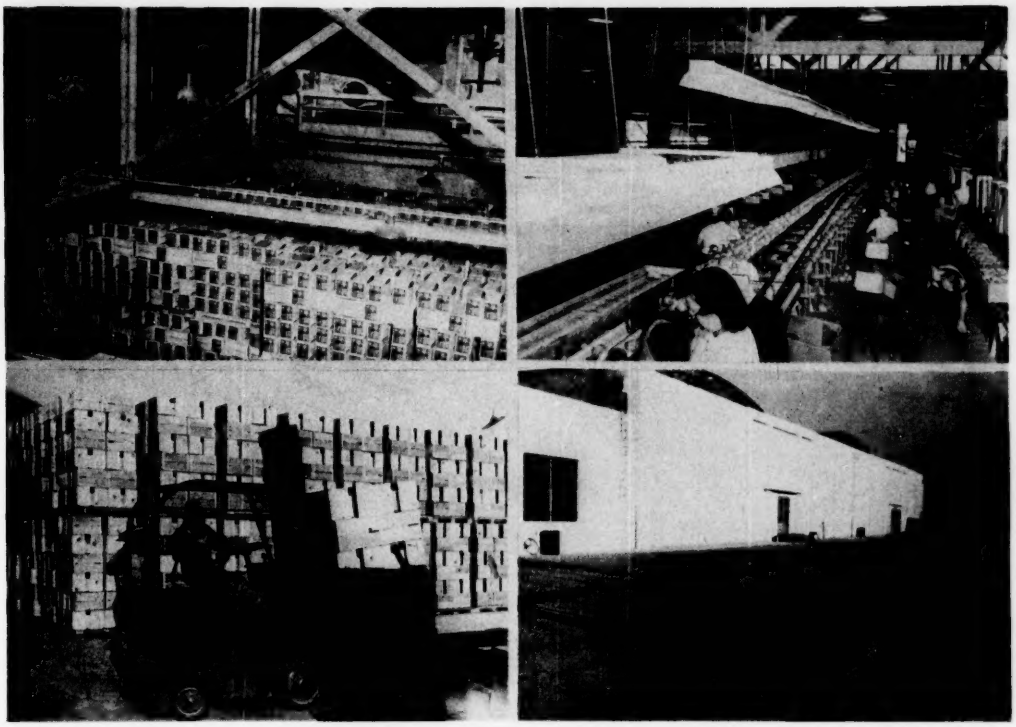
Roof insulation is 4 inches of cork placed on the top of the 2x6 in. roof sheathing. The built up roofing is laid on the cork insulation. Considerable care was taken to place the insulation around the ends of the trusses and at the juncture of roof and walls.

Refrigerating Equipment

The refrigeration equipment consists of five 6 cylinder "V" type Vilter compressors, two of which are driven by 50 horsepower motors at 600 rpm and three compressors each driven by 75 horsepower motors at 900 rpm. The two smaller compressors are arranged for automatic control and are equipped with unloaders, making it possible to operate at ⅓ or ⅔ of one 50 hp compressor capacity for winter operation.

Horizontal shell and tube condensers are used, as an unlimited supply of cold water from the Wenatchee River, is available at nominal cost.

Air distribution through the ducts located in the trusses is excellent. Velometer tests with D'Anjou pears piled fifteen boxes high (three pallets) show a minimum air velocity of 50 feet per minute through and under the pallet loads.



Upper left—Refrigeration unit and air ducts in background over pears in cold storage. Cooling unit and ducts are in truss space, removed from piling area.

Upper right—One of the two double sorting and packing lines. Total capacity of the plant is 1200 boxes of fruit per hour.

Lower left—One of the "lift trucks" and empty boxes outside the plant.

Lower right—Receiving or truck delivery end of cold storage building provides ample space for vehicles.

Packing Operations

The packing building accommodates two complete washers and packing lines, each with a capacity of 600 boxes per hour. The boxes are dumped in the washers automatically and fruit flows through the machines on conveyors to sorters and packers. Storage space for materials is also provided in this building.

General offices and comfort facilities for employees are located in the packing building. A new and modern office building is planned for next year, to be located away from the storage group.

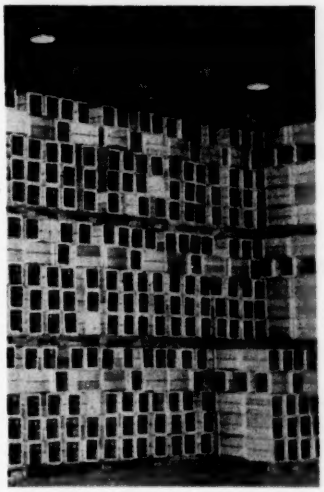
Heating of the packing area and offices is by hot water from an automatic oil-fired boiler. Radiators are used in all offices. The packing area is radiant heated with wrought iron coils in the floor slab with temperature controls making it possible to keep the space occupied by sorters and packers, heated without warming the area outside the operating space. The packing season in Washington state apple plants extends into the winter and it is quite important that employees be comfortable during cold weather.

The segregation building is arranged to separate the boxed fruit as to destination, sizes, grade, or variety, about 45 in number. A car loading port permits packed fruit to be shunted either to cars for immediate shipment or to belt conveyors for segregation, palletization and storage. The segregation building is also utilized as temporary storage of fruit yet to be packed or as a common storage building.

30,000 Boxes Daily

The cold storage buildings are designed for an input of 30,000 boxes daily. Weather, however, at times creates conditions where fruit must be handled in a rush. Under such conditions space in the Packing Building and Segregation Building is available to handle the overflow.

An Alnor electric thermometer is included in the engine and storage room equipment. Four thermo bulbs



Pears in boxes are stacked 15 high (three pallets). Apples are stacked 18 boxes high. Note that stacks rise up to the chord of the roof truss.

are placed in each of the four cold storage rooms, with the electric thermometer on the engine room panel where temperatures may be checked at any time without entering the storage rooms.

Defrosting of the eight special blower units is automatic and controlled from the engine room by a special time clock. Waste water from the condensers is warmed to 75 F. and sprayed over the two units in each room at the same time. Defrost spray is of 8 minutes duration, followed by a 3 minute drip period. At the end of the defrost cycle, the blower units are again cut in to the refrigeration system. Drain lines from the drip pans are large and pitched to the sewer connection.

Refrigeration Above Fruit

Considerable care has been taken to secure a reliable automatic refrigeration system, above the stored fruit in the trusses to avoid drip or water spillage that would damage the stored fruit. Storage space for several thousand boxes of fruit has been made available by the overhead arrangement of the refrigeration units and ducts.

The new plant is located on a 9 acre tract, formerly orchard. Space is available to double the cold storage when it is feasible. The present storage plant of 525 carloads can be approached from all directions, three sides by truck and on the north, by a loading track of the Great Northern Railway.

The town of Cashmere, originally named Mission, had its name changed by a much traveled early settler who likened the picturesque valley to the Vale of Kashmir, India. One of the state's earliest apple producing centers, it is one of the finest apple growing areas in Washington. Bartlett and D'Anjou pears, Delicious, Jonathan and Winesap apples are the favored varieties.

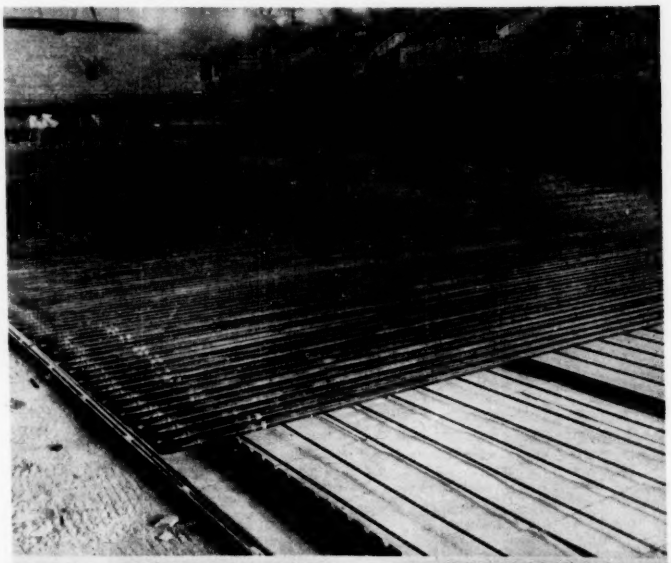
The Cashmere Fruit Growers Union is one of the oldest cooperatives in the United States to be in continuous operation; having started in 1907, and is composed of a majority of the fruit growers in the Cashmere Valley.

Packaging Exposition

THE American Management Association announces that it will sponsor its 20th National Packaging Exposition April 17-20 at the Auditorium in Atlantic City. Machines, equipment and services used in packaging, packing and shipping will be on display, and it is expected that the show will be larger than ever before, in both area occupied and number of exhibitors.

Ten Miles of Pipe in New Skating Rink

APPROXIMATELY ten miles (43 tons) of wrought iron pipe were used in the ice skating rink recently completed for the North Carolina State College at Raleigh. The rink was made possible by a gift from Mr. and Mrs. Charles Babcock of Winston-Salem. The pipe is laid in the shape of huge hairpins, with the fittings, such as valves and vents, located at one side of the rink, and all return bends at the other. The hairpins of wrought iron pipe are laid on supports, so that the concrete floor, when it was poured, completely embedded the coils of the brine circulating system. The building was designed by Northrup & O'Brien, Architects, of Winston-Salem, N. C., the rink was designed by Bevington-Williams, Inc., of Indianapolis, Ind., and Mr. Frank B. Turner, Chief Engineer for the State of North Carolina, was in charge of the project.



Above: The return bends of the wrought iron pipe hairpins which comprise the brine system of the new skating rink at North Carolina State College. The piping system is suspended on supports, the concrete floor completely embedding the hairpin coils.

Below: View from one end of the new skating rink of the North Carolina State College at Raleigh after concrete was poured. The rink used approximately ten miles of wrought iron pipe in the brine system.

CRYOSTAT – SUPER DEEP FREEZE

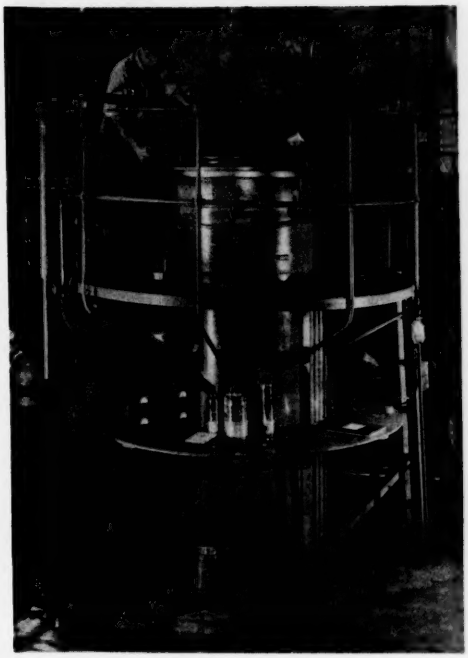
World's largest extra-low temperature apparatus cools contents to 452 degrees below Fahrenheit and provides new possibilities of low temperature research.

A 15-cubic-foot super deep-freeze, believed to be the world's largest very-low-temperature apparatus, which cools its contents to 452 degrees below zero Fahrenheit and can hold them there indefinitely, is now in operation at the Massachusetts Institute of Technology. The largest coldest box known, it will open the world of low-temperature research to studies on a scale never before possible.

Technically called a "cryostat," the new machine was designed and built by Dr. Samuel C. Collins, professor of mechanical engineering, in the M.I.T. low-temperature research laboratories with funds provided by the Navy Bureau of Ordnance and Office of Naval Research.

The new low-temperature machine, based largely on principles used by Professor Collins for the construction of a smaller cryostat of original design in 1946, operates by compressing, regeneratively cooling, and then expanding helium gas until a portion of the gas turns into a liquid just 7½ degrees above absolute zero, the lowest theoretically possible temperature.

The new machine, Professor Collins points out, fulfills for the first time the need for a large refrigerated space in which heavy equipment can be cooled and studied at lower temperatures than ever before possible. It provides a cylindrical working space 30 inches in diameter and three feet deep—larger than most home refrigerators — in which experiments may be operated and studied while held constantly at this low temperature.



Dr. Samuel C. Collins, professor of mechanical engineering (right) and Dr. Robert P. Cavileer of the M.I.T. research staff complete final adjustments on what is believed to be the world's largest very-low-temperature refrigerator, newly completed at the Massachusetts Institute of Technology. Designed by Professor Collins, the new "cryostat" will be used in fundamental research on the properties of materials at liquid helium temperatures. It will permit large-scale experimenting at lower temperatures than ever before possible.

Substances Change Under Low Temperature

In explaining the significance of the cryostat, Professor Collins notes that, as temperatures approach the theoretical lower limit of absolute zero, many substances take on novel and thus far unexplained mechanical and electrical properties. In some, resistance to electric current vanishes completely, giving rise to the phenomenon known as "superconductivity." The strength and brittleness of other materials change radically in this heat-less temperature.

When the cause of such behavior becomes better known, Professor Collins believes, some of the mysteries of the structure of matter itself may be understood.

The new cryostat, he anticipates, will be immediately used in research on the mechanical properties of metals, where studies at extreme low temperatures may yield information on strength theory which will in turn be useful in designing metals for greater strength at conventional temperatures.

The cooling capacity of the new machine is large enough so that it will overcome the heat from such factors as electric currents used in the course of experiments operated within the cold chamber.

The actual cooling is accomplished in the new cryostat by five expansion engines driven by compressed helium in much the same way more conventional engines may be driven by high-temperature steam. The helium actually gives up its heat to provide the energy used to move the engine, and the cold exhaust helium, when brought into contact with a stream of compressed gas, causes the latter to liquefy.

Five "helium engines" operate in tandem but at different temperatures in this super-cold refrigerator. The helium gas is compressed to 180 pounds per square inch and cooled by water before being fed into the parallel tubes of a counter-flow heat exchanger.

This device, designed to move heat from one part of the engine system to another, contains two long gas passageways. One of these distributes water-cooled compressed helium to the intakes of the five engines spaced along its length. The second collects the exhaust gas from the engines, which is much colder than the intake gas because of the work it has done, and conveys it back to the water-cooled compressor. On the way back, the cold "exhaust" gas absorbs heat from the neighboring incoming compressed helium, and there is enough refrigeration left over to liquefy a small part of the latter.

Lubrication a Problem

To build such "helium engines" is no simple mechanical problem, because there are no effective lubricants at the operating temperature of liquid helium. Pistons of extreme hardness are used in Professor Collins' machine, and they fit the cylinders so closely (.0002 inch) that piston rings are not needed. The piston rods, which range up to seven feet in length, are flexible so that the pistons "float" in the cylinders.

The new cryostat is a tank-like machine which stands more than 10 feet high. The refrigerated space is within a cylinder capped, during operation, by a steel lid containing a glass window through which the actual experiments may be observed. Connections to controls and instruments located within the refrigerator itself pass through this lid.

Collects at Bottom

The liquid helium produced by the machine collects at the bottom of the refrigerated cylinder, from where it may be drawn off as needed for other equipment. During operation the temperature of the helium atmosphere in this eight-foot-high cylinder ranges from that of the surrounding room, at the top of the cylinder, to that of liquid helium, within three feet at the bottom of the cylinder.

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Special NARW
Pre-Convention Issue

Ice and Refrigeration
January, 1951

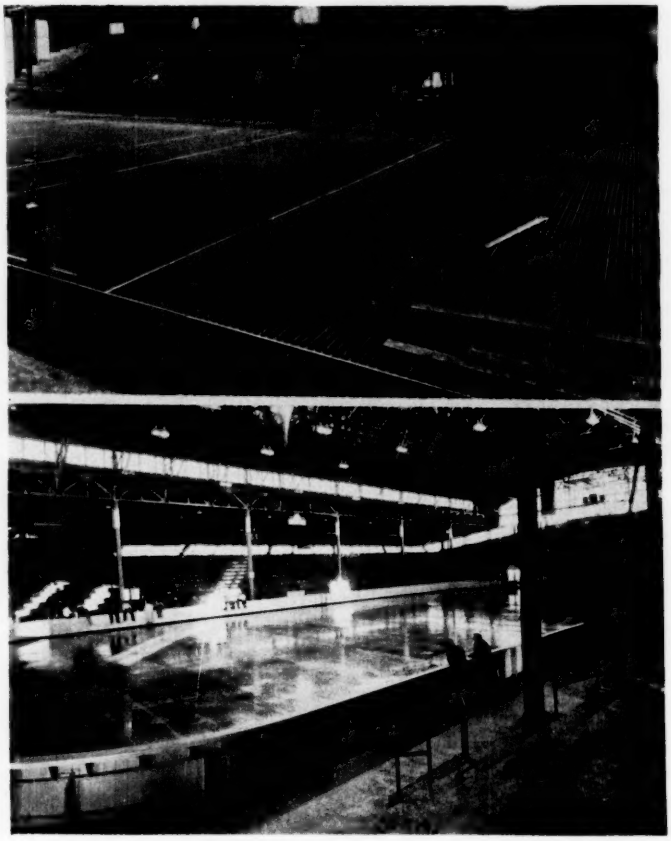
When the machine is not in operation, engineers enter the cylinder by using a ladder lowered through the steel lid. In this way equipment can be set up and adjusted before it is subjected to low temperatures.

An important characteristic of this type of helium cryostat, according to Professor Collins, is that the engines and heat exchanger are surrounded by a stable helium atmosphere. In this gas there is no tendency for circulation between warmer and colder areas which would quickly dissipate precious liquid helium.

A vacuum insulates the entire machine and refrigerated space from room temperatures. Pressure in this evacuated space must be maintained at below one millionth that of the atmosphere for satisfactory insulation.

The smaller cryostat, first built by Professor Collins in 1946, has since been produced commercially and is in wide use in educational institutions and scientific laboratories through the United States. It is estimated that over 80 percent of the liquid helium now produced in this country comes from machines of this type.

New Skating Rink Revives Ice Sports



The ice skating rink in new field house of Rensselaer Polytechnic Institute, Troy, N. Y., built to revive interest in ice hockey as a major sport. Above are shown the 1¼ inch wrought iron pipes at the supply and return header end. Below, the completed rink, with wrought iron pipes embedded in the concrete floor.

REVIVAL of ice hockey as a major sport at Rensselaer Polytechnic Institute has been attained by installing a skating rink in the new field house at Troy, N. Y. More than eight miles (43,000 feet) of 1¼-inch wrought iron pipe were laid transversely across the rink and concrete was poured over the pipe to form a floor of approximately 16,000 square feet in area. The pipe was laid on 4½-inch centers in hairpin-shaped units, locating all the bends at one side of the rink and both supply and return headers at the other side. This type of construction also locates all the control valves at the one side of the rink, for convenient control operations. The installation required more than fifty tons of wrought iron pipe.

THE ICE INDUSTRY

NATIONAL ASSOCIATION OF ICE INDUSTRIES

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THIS MONTH IN BRIEF

Survey sponsored by National Association of Ice Industries turns up valuable information on selecting sites and other conclusions regarding operations of ice vending stations.

Bulletin issued by National Association of Ice Industries outlines a practical accident prevention program.

Interpretations of Wage Hour Law exemptions are reviewed by General Counsel of The National Association of Ice Industries.

Report on recent field school at St. Louis conducted by Personnel and Marketing Department of National Association of Ice Industries.

Southern ice companies are cleared of anti-trust charges in U. S. District Court.

Unit ice association secretaries hold annual meeting in connection with annual convention of National Association of Ice Industries.

Report of annual convention of Canadian Association of Ice Industries.

Southern ice man gives facts on costs of refrigeration in "letter to the editor" of local newspaper.

Meetings and other activities of unit ice associations.

LOCATION OF ICE VENDING STATIONS

Survey produces important conclusions on selecting sites for vending stations. Sponsored by National Association of Ice Industries.

ORIN E. BURLEY
Wharton School of Commerce and Finance
University of Pennsylvania

THE increased use of ice vending stations, like any retail merchandising development, has not come to the ice industry without its problems. In general, trial and error has predominated in the choosing of sites for stations. Some look for this, and some look for that. Even experienced operators are not in accord on what constitutes a good location. As a result, too often it has been necessary to cancel leases and move a station from one place to another. Frequently it has been necessary to operate a vendor at a loss for a year or more before a profitable location could be found.

Even where vendors are considered to be operating on a satisfactory level, one unit may have several times the volume of sales of another. In our investigation the highest volume station did 17 times the business of the lowest volume unit. This fact in itself clearly indicates that selection of a location may well mean not only the difference between loss and profit, but the difference between a marginal and a very profitable operation.

Manufacturers Cooperate

This study was sponsored by your Association with the cooperation of three vending machine manufacturers: S & S Vending Machine Co., San Jose, Calif.; F. B. Dickinson & Co., Des Moines, Iowa; and Thermo Cuber, Inc., Chicago, Ill. Twenty ice manufacturers made their facilities and records available.

Obviously, a project of this type is not designed to replace executive decisions. Nor with its use will it guarantee "100 per cent" locations. Instead, it is intended to serve as a guide or manual for the use of an ice company in studying proposed locations for stations. Also, we believe it will be of value to companies which have never made use of vendors. It should assist them in determining how to make the most effective and profitable use of these outlets. Needless to say, we could not get all of the answers in this one brief study, but we believe we have developed quite a lot of information which will be helpful to you.

Our investigation was limited to automatic, refrigerated, self-service stations not operated in connection with the plant. This, of course, means that manually operated refrigerated retail stations and "hot boxes" were not included.

In general, we studied two stations in each market; the one with the highest volume of sales and the one with the lowest take. Insofar as possible, we selected stations that vend both block and prepared ice. The annual tonnage figures for the highest volume stations included was 687 for block ice and 151 for prepared ice. The lowest volume unit had a block ice tonnage of 30 and a prepared ice tonnage of 20.

Customer Buying Habits

First, I would like to give you some of our findings on the customer who buys at vendors and his buying habits. Buying habits, as you know, have a direct and important bearing on the location of any retail establishment. Then I would like to take

From address at annual convention, National Association of Ice Industries.

What This Survey Shows

1. Selection of location may mean difference between marginal and profitable operation.

2. High volume stations sell less block ice and higher percentage of prepared ice. But all stations sell more block ice than prepared ice.

3. Fifty percent of the purchases are made between 4:30 and 8:00 p.m.

4. Fifty percent of purchases are made on Friday, Saturday and Sunday.

5. Sixty percent of customers of high volume stations, and 52 percent of customers of low volume stations own mechanical refrigerators.

6. Ninety percent of the customers haul the ice away in their cars.

7. Purchasers of packaged ice are of a higher income level than those who buy block ice.

8. The maximum distance customers will travel is about 1.5 miles for prepared ice and slightly less for block ice.

9. Most of the customers do not buy ice elsewhere.

10. Middle income groups are better customers.

11. Station should be on side of street handling heavy flow of traffic between 4:30 and 8:00 p.m.

12. In most cases a comparatively wide lot is necessary in order for vendor to be visible to passing motorists.

13. Proper lighting is essential and most high volume stations had their parking area floodlighted.

14. The best form of advertising is a sign denoting presence of station.

15. The need for parking space is obvious. On-street parking depends upon the type of traffic and width of street.

16. The kind rather than number of traffic is important. Too much traffic can hinder sales. A speed of more than 25 miles an hour is a detriment to easy stopping.

17. Location of ice vendors do have an effect on ice routes. This has led to consideration of installing a vendor to replace an unprofitable delivery route.

up some of the factors bearing on a specific location.

It appears that the high sales volume stations as compared to low volume units derive less of their sales from general home users of ice and thus sell less block ice. On the other hand, the high volume stations sell a higher percentage of packaged or prepared ice for special occasions, picnics, etc. Forty percent of the block ice users in high volume stations use ice for general household purposes. Whereas, the comparable figure for the low stations is 55 per cent. Consequently the low volume stations have a greater frequency of repurchase of block ice.

The high volume stations have a greater frequency of repurchase of prepared ice. In both types of operations block ice with its high frequency purchase carries the "base load." However, over 20 percent of the prepared ice customers stated that they buy ice two or three times a week. Because of the larger sales of prepared ice in high volume stations, seasonal fluctuations were greatest for these units.

Time of Purchase

A study of the time of purchase of the ice reveals that during the week, 50 percent of the ice is purchased between 4:30 and 8:00 p.m. for both high and low volume stations, and for both block and prepared ice. This leads to the supposition that a location on main arteries leaving the center of the city would afford complete coverage of the residential market. In part this is true; however, about 50 percent of the vendor's sales are made on Friday, Saturday and Sunday. During this time, a more convenient location would be a secondary shopping center. A combination of these theories would appear to offer the best possibilities.

Because of the nature of the product and its uses, there is bound to be a seasonal fluctuation in sales of ice through vendors. With the exception of one station in each classification all high and low volume stations have more block tonnage than prepared ice tonnage. Seventy-two per cent of the tonnage of the high volume stations was block ice as compared to 62 per cent for the low volume stations.

It appears from these figures that the high volume stations owe much of their success to the sale of block ice. However, the uses to which the ice is to be put show a larger percent of the high station customers using the ice for purposes other than general home use. Sixty percent of the customers who patronize the high volume stations were found to own mechanical refrigerators, and the comparable figure for the low volume units was 52 percent.

The high volume stations have a larger degree of fluctuation of sales. This can be explained by the fact that the high volume units depend more on seasonal customers rather than all-year general home users of ice. This again is an indication of the dependence of low volume stations on the ice refrigerator users. A more salient fact is that the high volume station does not have to approximate a flat yearly sales curve.

For prepared ice, the greatest amount of fluctuation is present in the high volume stations, which incates their greater dependency on seasonal or summer trade for both block and prepared ice and their greater success in selling the non-general home users.

Transportation Necessary

The weight of ice makes some type of transportation a necessity even for customers who live only a few blocks from the stations. Commercial transportation was not significant. Over 90 percent of the people hauled the ice away in their cars. Another 4 plus percent used trucks. Such a small percentage of customers without motor vehicles patronized the vendors that availability of pedestrian traffic need not be considered as a determining factor in location.

To the extent that there is a correlation between average age of the automobiles and the customers income level, it appears that the purchasers of packaged ice are of a higher income level than those who buy block ice. The average age of the cars driven by the packaged ice customers were found to be considerably lower than those driven by the block ice buyers.

The maximum distance which customers will travel, or are traveling to purchase ice is about 1.5 miles for prepared ice and slightly less for block ice. Oh yes, there are some who come to the station from much greater distances, and some stations do get some transient business, but these customers account for a small per-

centage of total volume in most areas. The distance which customers go to buy ice is useful only to prevent overlapping of potential market areas, as well as to provide complete coverage of the market. Whether or not customers buy ice at other locations, of course, depends partially on the distance which must be traveled.

It is exceedingly interesting to note that vendor customers as a rule are loyal customers. A very large percentage of the customers do not buy elsewhere. They like to buy at vendors, but a small percentage were critical of finding empty stations. This, of course, is a service problem. The presence or absence of other vendors at slightly greater distances, or the presence or absence of retailers such as "hot boxes" appear to have little effect on customer loyalty.

There is a definite correlation between the use to be made of the ice and the type of refrigeration in the customer's home.

Mechanical Customers

Of the customers who buy block ice for general home use, roughly 15 percent have mechanical refrigerators. Of the block ice customers who buy for special occasions, well over 90 percent have mechanical refrigerators in their homes. Over 90 percent of those who buy ice for picnics and making ice cream have mechanical refrigeration. This would seem to substantiate that the station has great pulling power for these uses among mechanical refrigerator users.

Location

Now suppose we examine factors bearing on specific location. It appears that the characteristics of neighborhood have a decided bearing on the type of ice which will be sold. As we go from commercial to residential neighborhoods, the high volume stations show a straight run variation, with the percent of block ice sold decreasing and the percent of packaged ice sold increasing. This is significant, for it shows that the low volume stations are not reaching their best potential market.

Income Groups Differ

The distribution of both high and low volume stations among the various income levels, appear to be significant. The low stations have an overwhelming percent located in the middle to high income level. On the other hand, the high volume stations appear to be predominantly located in the middle income areas. This would seem to indicate that middle income groups are better customers. Surprisingly enough, the middle income areas surpass the low income areas on the volume of block ice. The high stations had a larger percent of packaged ice in all income levels.

Location Within Block

Location within the block seems to have little bearing on the success of a location. Fifty-five percent of the high volume stations were located on corners, whereas 78 percent of the low stations had similar locations. More important than place within the block is sight distance and side of street on which the station is located. Since 50 percent of the ice is sold during a rather short period and for most days between 4:30 and 8:00 p.m. a station should be on the side of the street handling the heavy flow of traffic at that time, and it should be visible to this traffic.

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Special NARW Pre-Convention Issue

Ice and Refrigeration January, 1951

Sight distance is further emphasized by the fact that 55 percent of the low volume stations cannot be seen by outgoing traffic during the peak evening movement. The sight distance was zero, meaning in order to see the station, the driver must be directly opposite the site. The only advantage to a corner location is to increase the volume of traffic and possibly to increase sight distance. In our study, despite the fact that many low volume stations have corner locations, one of the streets often was found to be a small side street with negligible flow of traffic, consequently of little value.

Width of Lot

Sight distance is also dependent upon the width of the lot on which the vendor is located. In many of the locations studied, the area was developed to the point where a comparatively wide lot was necessary in order for the vendor to be visible to the passing motorist. The average width of the lots for high volume stations was 110 feet as compared with 85 for the low volume units. The difference is significant in that it frequently meant the difference between adequate and poor sight distance, which is important in attracting the large percentage of occasional and new buyers of ice.

In addition to width of lot, distance from the street also is a function of sight distance. Because of need for adequate parking space, vendors are located farther from the street than at first seems necessary for good sight distance. These distances ranged from 9 to 150 feet, with an average of about 60 feet.

Proper Lighting

Since the time during which 50 percent of the ice is sold falls roughly between two hours before and two hours after 6:00 p.m. proper lighting is very essential. All stations studied provided some type of lighting ranging all the way from partial illumination to floodlighting of the parking area. All of the high volume stations had complete illumination of the vending station and 82 percent of them had their parking areas floodlighted.

On the other hand, the low stations had one of their stations very poorly lighted and only 45 percent of them had the parking area floodlighted. The lighting is particularly important to the prepared ice customers and special occasion users who buy later in the evening, especially on Friday and Saturday. Unfortunately, the type of lighting has often been dictated by the other commercial enterprises such as gas stations on the lots where the vendors are located.

Signs

One of the best forms of advertising for any establishment is a sign denoting its presence. We are convinced that many operators of vending stations have neglected to make full use of this medium to the detriment of sales. This fact becomes more obvious when a comparison is made of high and low volume stations and the signs used by each group. All stations both high and low, had signs on either or both front and side of the vendors. Unfortunately, many of the vendors have their sides blocked wholly or partially

from view, so the only remaining visible sign is the one in the front of the vendor which makes it parallel to the street.

Fifty-four percent of the high volume stations studied had signs over the street while only 22 percent of the low volume units had such signs. These facts would not seem so significant except for the often heard comment of first-time customers that they never knew the stations were there, even though they had often passed the location.

Parking Space

The need for parking space is obvious, and all but one of the vendors studied provided some form of off-street parking. The size of the lot is of some importance, especially on week ends when a large number of customers patronize the vendors during a relatively short period of time. The average number of cars which could be parked off the street at high volume vendors was 12, and the comparative figure for low stations as 7.5. The difference does not appear to be significant because both areas appear to be adequate.

Whether or not on-street parking can be used is entirely dependent on the type of street on which the vendor is located. Frequently vendors are located on heavy traffic thoroughfares where parking is impossible or difficult. One station studied had no off-street parking, although it was located on a heavily traveled street. It, however, was doing a large volume of business, and more important there was no visible complaints about lack of off-street parking facilities.

The width of the street on which the vendor is located becomes critical only when a street is either too wide so that passing motorists cannot see the vendor or when the street is so narrow as to cause congestion.

Traffic Count

It would seem that traffic counts should be larger for the high volume stations than with the low units. No such differential was found to exist. It is a truism that mere numbers of traffic do not make one location better than another, but instead it is the kind of traffic. After all it is the number of potential customers which is the significant factor.

Too much traffic can actually hinder sales, especially between 4:30 and 6:30 p.m. by making entrance to and exit from the vendor difficult or dangerous. Location on a main artery merely to increase total traffic in itself appears to be a poor reason. In our study, many of the low volume stations were on routes of heavy commercial traffic most of which could have no bearing on the success of the vendor.

Traffic Speed

Speed of the traffic is both a function of the sight distance and accessibility to the station. Fast traffic will not permit drivers to become acquainted with the location. Furthermore, it makes it difficult for them to pull out of the line of traffic and enter the parking lot. With a speed of over 25 miles per hour, it is virtually a necessity that a sign be placed on the street perpendicular to the drivers motion in order that the station's presence may be made known in time for easy stopping. It appears that most companies have used good judgment by not placing their stations on fast highways.

There is a certain amount of unanimity of opinion as to how long a station should remain in a location before it can be adjudged a success or a failure. Unless the sales are practically non-existent, a year and a half (including two summers) is the maximum time. It is believed that this period could be reduced by surveying the number of first-time customers by interview, in order to find the rapidity with which the station is attracting new customers.

Advertising

Almost all of the stations which were studied are or have done some advertising. One of the most frequently used methods of advertising is the use of handbills distributed to the residents in the area surrounding a station. Some companies advertise their vendors on the radio, on television, or in the newspapers.

Unfortunately, a number of companies advertise but little after the station is located, depending on the initial spurt to place a vendor before the public's eye. This procedure, of course, is contrary to all present theories of advertising methods. Most advertising men insist on repetition for effectiveness.

Distance from Plant

The maximum distance of any station included in the project from ice plant was six miles. The average was three miles. In line with the sales pattern developed in this investigation, it would appear that the industry might well benefit materially through a cost study of servicing the stations and merchandising the ice in this manner.

It was also observed that in areas where vendors are being used, manually operated stations and "hot boxes" have all but disappeared as a factor in the retailing of ice. This fact is not surprising for the vendor gives full weight due to its refrigerating unit. It provides twenty-four hour ice service. And in this day of self-service, it is a self-service machine. These facts are restated time and again by former patrons of "hot boxes." Consequently, it does not appear that the distance from the station to a "hot box" should have too much bearing on a proposed location.

The distance to another vendor in itself should not determine location. Some locations should be no closer than four miles, while others, because they are drawing customers from two different areas, may be as close as 1 mile. A secondary shopping center location usually draws its customers from the surrounding area. On the other hand, an arterial location tends to draw customers more from an area shaped like a semicircle with the station located on the diameter line. Perhaps the most conclusive evidence that distance between vendors by itself is not particularly significant stems from the fact that the average distance of the high volume station studied to another vendor was 2.6 miles, whereas for the low volume stations the comparable figure was 3.7 miles.

Effect on Delivery Routes

The effect of delivery routes on a vendor location is not too significant, but the opposite is significant. With one exception all of the stations studied had delivery routes serving their potential market. Certainly one of the most surprising facts is that a very substantial percent of the general home users of ice have a decided loyalty to the vendor. In other words, there are many customers who, having a choice of buying from a delivery route or from a vendor, get in their cars two or three times a week, drive several blocks to a vendor and haul the ice home.

Contrary to the claims of some icemen, our investigation indicates that location of a vendor has an effect on ice routes. This had led icemen in some cities to seriously consider elimination of uneconomical delivery routes by placing vending stations in the area to serve the customers.

Bulletin Outlines Accident Prevention in Ice Industry

A BULLETIN on safety issued by the Personnel and Training Department of the National Association of Ice Industries points out that accident prevention is good business because the cost of accidents is always much greater than the cost of prevention.

The number of ice industry accidents remains lamentable. Current frequency rate of disabling accidents is 63.79 for every million man-hours of work. Severity, measured by number of days lost per thousand man-hours due to accidents, is 4.79. Preventable accidents are costing the ice industry considerably more than $18,000,000 each year, according to the National Safety Council. And this unpleasant situation has existed for many years.

The present average frequency rate of all industries in the United States is 11.49, with average severity of 1.12. Such hazardous operations as steel production and aircraft manufacturing, for instance, have low frequency rates of 5.86 and 4.56 respectively. How do they do it? With highly effective safety programs in continuous operation!

Actually, there are today only three industrial activities in the country with a higher frequency rate than the manufactured ice industry. Think of the staggering cost of accidents to ice companies during the past twenty years. Think of the money that could have been saved, and human suffering that could have been spared through an effective, consistent safety program in every ice plant.

Through the very understandable and human reason that production problems, customers, tax and labor problems, and the maze of other similar matters pressing the ice executive today . . . the safety program is often lost in the shuffle, unless a carefully planned long range program is operating under supervision of the plant manager and his staff.

Without question the primary responsibility for safety rests with top management. Good management requires prudent control over all elements of ice production and distribution costs. The least of these costs is by no means the cost of accidents . . . doctor bills, insurance, lost time, loss of production, equipment, and general inefficiency that unsafe methods produce. Ice companies are paying for a safety program whether they have one or not.

A number of topics for ice company safety meetings are suggested, including crushers, belts and pulleys, and tools.

Wage Hour Interpretation Limits Ice Exemptions

AN interpretative bulletin has been issued by the Department of Labor setting forth the government's position with respect to the "Retail and Service Establishment" exemptions as contained in the new Wage-Hour Law, effective January 25, 1950.

Under the terms of the law, an establishment is exempt from its provisions if 75 percent of its annual dollar volume is derived from sales of goods or of services (or of both) which are not sold for resale. A sale is considered "sold for resale" where the seller knows or has reasonable cause to believe that the goods or services will be resold, either in their original form, or in an altered form, or as a part or ingredient of another article. Cited as an example of the latter instance in the interpretations is "ice in beverages."

Under the above provision, it is felt that many ice companies should derive some exemptive relief from the coverage of the law. Under the interpretations however there is some doubt as to whether such relief is possible. In this regard the General Counsel of the National Association of Ice Industries does not agree with the interpretations and a study is now being made as to how the ice industry can obtain the kind of exemption it is felt Congress intended.

An analysis of this bulletin is now being made and will be issued in bulletin form at an early date.

American Ice Company

AMERICAN Ice Company nine months' report shows net profit of $117,855, compared with $567,574 for the same period last year. The September quarter showed a net profit of $231,203, compared with $431,828 for the same period of last year.

The Ice Industry

Canadian Ice Plant Holds Formal Opening

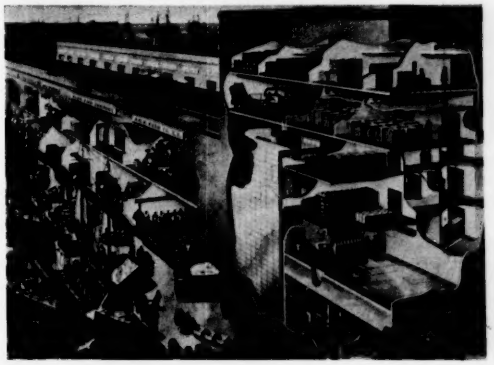
PLACED in operation some months ago, the new ice-making plant of the Lake Simcoe Ice & Fuel Ltd., Leaside, Ontario, Canada, was formally opened Friday evening, September 15. The visitors saw a handsome and commodious building which represents, in planning and mechanical operation, the most modern and efficient means known at present for producing ice.

The visitors were shown the various stages of freezing and harvesting ice blocks, the four compressors in the engine room, scoring the ice blocks, the ice storage room, and the delivery equipment, the trucks being painted a distinctive bright red coloring. On the day of its opening the local newspaper published a descriptive article on the plant, and a picture of H. J. Fairhead, president of Lake Simcoe with Mayor Manes of Leaside.

No Priorities on Ice

THE National Production Authority, Department of Commerce, has issued NPA Regulation 2—"Basic Rules of the Priorities System." This regulation merely sets up the system on which priorities will be operated. It provides for one class of defense orders (DO orders) to which suppliers must give priority in order to promote the re-arming of the nation. Ice and certain other products listed are specifically exempted from this regulation. This means that under the regulation an ice company will not be concerned for the present with priority ratings on ice because there are none.

Picture Tells How a Fish Pier Operates



This view of a typical fish pier appeared in a full-color page advertisement in the November 18 issue of The Saturday Evening Post. Presented by the Armstrong Cork Company in cooperation with the National Fisheries Institute, the view and accompanying editorial explanation told briefly the facilities and activities of handling fresh seafood.

St. Louis Field School Adds Eighteen Graduates

EIGHTEEN executives from ice companies in Missouri, Illinois, Kansas and New Mexico attended the first NAII field school of the 1950-51 season, held October 16-21 at St. Louis. Dr. Thomas Douglas of the National Association's Personnel Training and Marketing Department is again conducting the course.

Classes were held in the meeting room of the City Products Corporation, 3638 Olive Street. Visiting lecturers, with their subjects, were as follows: Dr. Arthur L. Rayhawk, merchandising; Prof. Harry R. McClain, public speaking; and Robert L. Berra, human relations — all three from St. Louis University; Chris J. T. Senes, St. Louis business consultant, conference leading; and John Breslin, personnel manager, St. Louis Division of the City Products Corporation, recruitment of personnel.

One of the highlights of the school was a class visit to the Ice Kitchen sponsored by the St. Louis Association of Ice Industries. Members of the class were impressed by the effective presentation made by Miss Edna Hopper, who directs the Kitchen.

On Friday evening, October 20, the class was entertained by the Missouri Ice Association at a dinner in the Lindell Room of the Hotel Melbourne. Outside guests who attended were Walter Rathert, president, St. Louis Association of Ice Industries, Elmer Goebel, City Products Corporation, and V. A. Esphorst, secretary of both the Missouri and St. Louis Associations.

The membership of the class represented 262 years of ice industry experience. Elected class officers were the following: Charles F. Hood, Independence Ice & Creamery Co., Independence, Mo., president; Fred Heine, City Products Corporation, St. Louis, vice-president; Walter G. Cassmeyer, Merchants Ice & Coal Co., St. Louis, secretary; and James A. Shuhardt, City Products Corporation, St. Louis, treasurer.

Others awarded certificates of graduation were: Larry L. Brownfield, Merchants Ice & Coal Co., St. Louis; Fred J. Bujnak, St. Clair Ice Co., Belleville, Ill.; W. E. Gregory, Pure Ice Company, Cape Girardeau, Mo.; Harry A. Hansen, Fayette Ice & Storage Corp., Fayette, Mo.; H. F. Horine, The Railways Ice Co., Cassville, Mo.; Raymond W. Kergo, City Products Corp., St. Louis; L. R. Kinney, The Railways Ice Co., Monett, Mo.; Fred H. Lieurance, The Railways Ice Co., Clovis, N. Mex.; Ted H. Moore, Capital Products Co., Jefferson City, Mo.; William C. Murphy, City Products Corp., St. Louis; L. A. Nickell, Jr., Columbia Ice & Storage Co., Columbia, Mo.; Harry E. Rathjens, City Products Corp., St. Louis; E. W. Woodruff, The Railways Ice Co., Kansas City, Kans.; D. P. Wright, The Railways Ice Co., Kansas City, Kans.

Pravda Assails Lack Of Ice Storehouses

PRAVDA, Soviet Russia's state newspaper, recently published a feature article on the construction of storehouses built of ice according to the Stalin prize-winning methods of Engineer M. M. Krylov.

Eleven years ago Pravda reported that Engineer Krylov, a senior scientific worker at the Institute of Cold Studies of the Academy of Science, had invented a very cheap and easily built storehouse made of blocks of ice and insulated with sawdust, wood shavings, evergreen needles, crumbled peat and even ordinary earth.

But although one such icehouse is still in operation after eleven years —without the ice melting away— Mr. Krylov's invention has been generally overlooked by the food industries.

Pravda blamed this condition on skeptical persons who remembered the fairy tale about a fox who built his house of ice and a rabbit who built his of straw. In the summer the fox's house melted.

Pravda said: "An interested worker of an interested ministry looks at a standard project for an icehouse and cogitates: All right, supposing somewhere in Moscow such a storehouse stood for eleven years and did not melt. I agree the man did not get a Stalin prize for nothing.

"But the devil knows there's something funny about it—a storehouse made of ice. It even says in the fairy tale that the ice hut could not compete with the straw hut. And this fairy tale no doubt existed for centuries."

Pravda observed that "a cool attitude freezes construction of icehouses."

Conrades Appointed

Paul E. Conrades, president of the Merchant Ice & Fuel Co., St. Louis, Mo., has been named to the board of directors of Washington University Research Foundation. Mr. Conrades is an alumnus of the university.

Ice Companies Cleared on Antitrust Charges

THE Atlantic Company, six affiliated ice companies and two of Atlantic's officials have been acquitted by a jury in U. S. District Court at Macon, Ga. of violating federal antitrust laws. The jury reported two hours and 40 minutes after it received the case. Judge T. Hoyt Davis' charge to the jury required an hour and 15 minutes to read.

More than 600 documents were sent out with the jury. Most of them were exhibits introduced by the government. A majority of them were letters, contracts and other papers from the company's files.

In his charge, read to the jury, Judge Davis told the jury that if it found from the evidence that the defendants had conspired to eliminate competition and to monopolize the ice business in the Southern States on ice moving in interstate commerce it should find the defendants guilty.

But he cautioned the jurors the burden was upon the government to prove that the defendant companies were guilty.

City Ordinance Upheld Bans Sale of Ice Not Scored

FOLLOWING a circuit court hearing, the Lealman Ice Co., St. Petersburg, Fla., has been denied the right to sell block ice within the city limits unless it is weighed or scored inside the city. The company's plant is located a short distance outside the city limits. A city ordinance requires that ice must be scored in blocks at least eight percent overweight. The ice company brought suit to declare this ordinance void on the ground that it is arbitrary and unreasonable and interferes with legitimate business. Circuit Judge Victor O. Wehle upheld the city ordinance. The company may continue to sell crushed or sized ice and ice cubes within the city limits.

New Trial in Sized Ice Patent Suits Asked

FOLLOWING decisions in U. S. District Courts in Baltimore, Md., and Dallas, Tex., holding the Orrison sized ice patents invalid, motion for a new trial has been filed by attorneys for plaintiffs. Motion for a new trial was based on claim that new evidence has been discovered in connection with prior use in Columbus, Ohio. Attorneys representing the plaintiffs indicated that motion for a re-hearing will be filed in the Texas suit also and that additional suits may be filed in other district courts.

Reports from Unit Ice Associations

Unit Ice Association Secretaries Hold Annual Fall Meeting

WITH a forenoon session on the opening day of the annual convention of the National Association of Ice Industries, the Unit Ice Association Secretaries held their annual fall meeting. Reports were presented by representatives of the National Association and reports were made by the secretaries touching on conditions in their sections and the work of their associations. V. A. Esphorst, secretary of the Missouri Association of Ice Industries, president of the group, presided.

Officers Elected

As officers for the coming year, Miss Muriel Washburn of Florida was elected president and Mrs. Edna Vaughan of the Delta States Ice Association secretary-treasurer.

Mount Taylor, secretary of the National Association, commenting on the decline in ice sales the past three years said that the major cause was the weather, but that another contributing cause was the increased number of small ice-making machines. For the coming year, he said, it will be necessary more than ever before to watch costs and drive ahead for more new business. It will not be a year to let down. The past year was the third in succession that adverse weather affected ice sales and the law of averages is bound to bring a change very soon, perhaps next year.

We have to recognize, he said, that domestic demand is decreasing while commercial demand is going up. This does not mean that we should abandon the domestic market, but we should recognize the shifting demand and concentrate selling efforts where they will count for the most. Another change that must be recognized is the decreasing market for block ice and the increasing use of sized and cube ice. Another important trend is that of making ice available through vending stations. And, finally, another big factor in the ice business of today, and one that will be with the industry for a long time to come is government controls and regulations.

C. P. Austin, director of the Research and Engineering Department reported that this department, under the direction of Leonard Swartz of Indianapolis, Chairman, had had a successful year. One big help was the fact that other research agencies were interested in the same line of research as was the ice industry with the result that the association had benefitted by about $4.00 for every dollar spent. He mentioned recent work in icing sweet corn, from which they had obtained excellent results. A more recent project was selling meat retailers on the use of crushed ice for display of fresh meats.

Miss Muriel Washburn (right), secretary of the Florida Ice Association, was named president of the Unit Ice Association Secretaries Council at Chicago during the NAII convention. Mrs. Edna Vaughan, assistant secretary of the Delta States Ice Association was elected secretary-treasurer.

Wm. T. Jobe, general counsel of the National Ice Association, discussed briefly some of the current legal activities of the ice industry. Next to the sized ice patent suits, which appear to be on the way to a successful conclusion, one of the important developments in the business picture are anti-trust suits. In this connection Mr. Jobe advised ice executives to be careful what they do or write that might come in conflict with some federal law or regulation.

For some time his department has been working on clarification of the status of retail sales, seeking to establish the principle that any sale of ice be classed as a retail sale if not sold for resale. But recently the interpretation of this provision has been drastically changed so that sales to drug stores and other similar users are classed as sales for resale. The same thing is true in regard to transportation such as icing trucks and refrigerator cars. Also refrigeration used in cold storage locker plants and other service is classed as "resale." Preliminary plans, Mr. Jobe stated, are being made to oppose this interpretation, because it is felt that it has completely distorted the intent of Congress when passing the law.

Daniel A. Prager, director of the Personnel Training and Marketing Department, gave a brief resume of the work of the National Ice Marketing Institute. During last year this institute held 11 schools from which 157 men graduated. During last year a number of local schools were held with the cooperation and under the direction of local unit associations and these had been very successful.

Mr. Prager announced that a new training program had been prepared with films and other educational features, but this program had been postponed and the Institute had concentrated on training new employees and re-training old employees.

Another activity of the department was the preparation and publication of the prepared ice merchandise aids with an assortment of advertising materials. These were designed for the purpose of contacting big users such as grocery chains, hotels, food stores and the meat industry. This material, he said, would be followed up and expanded. Also the department would continue to promote ice and merchandising forums by unit associations.

Thos. W. Douglas, director of training schools for the National Ice Marketing Institute, spoke briefly and called attention to the fact that this institute now has a total of 335 graduates.

Guy W. Jacobs, director of the Public Relations Department, spoke

briefly on the advertising plans for 1951. The advertising program, he said, will not be cut and it is expected that former subscribers will continue and enough new subscribers obtained so that the essentials of the program will not be curtailed over last year. The chain letter idea of solicitation which had been put into effect is not expected to raise the necessary funds, but it will be a good foundation for the yearly personal solicitation. In this he reminded the secretaries they would be called on for help. While the ice business is not so good, general business conditions are very good, he said, and, of all times, now is the time for the ice industry to do what needs to be done to build better business.

Secretaries Report Local Activities

General P. A. Weatherred of the Southwestern Ice Manufacturers Association discussed briefly the recent sized ice patent suits. The decision in Texas he said was a clean sweep decision to the effect that the patent was invalid because of proven prior use of the term "sized ice."

Regarding local conditions, General Weatherred said that ice sales in Texas were off last year more than any year since 1926. One bright spot is the fact that commercial sales, especially processed ice, showed gains. Regarding the immediate future he said that conditions in 1950 were similar to those of 1943 and judging trends of the last few years he expected 1951 to be on a level with 1950.

Guy W. Jacobs speaking for the Ohio Association of Ice Industries said that sales in Ohio generally were down last year but processed ice showed an increase. Their safety program, he reported, is being continued and this has resulted in decreased rates, except that last year there was a slight increase due to increased payments allowed on personal disability claims.

R. W. Florrid, reporting for the Georgia Ice Manufacturers Association, said one of the outstanding accomplishments this year were the merchandising forums. These will be continued and more are planned. From observation, he said, there is plenty of room to make ice available and he thought that the work of such agencies as merchandising forums conducted by local associations would go a long way toward bringing better conditions in the ice industry.

J. R. Espy of the Mountain States Association reported that in his section they were finding it difficult to keep good help and next year probably would show, little, if any, improvement.

Samuel Freer of the Eastern States Ice Association reported a drop of about 27 percent in ice sales in Philadelphia during last year. Some of this was due to weather conditions but a considerable amount, he said was due to increased purchases of ice-making machines.

Wm. Strauss of the Chicago District Ice Association said that the general opinion among Chicago ice men was that the weather was chiefly responsible for decreased sales last year and here also there is a bright spot in the picture in the increased sales of commercial ice.

Paul F. Hoff reporting for the Wisconsin Association said the association, instead of holding a convention last year, joined with the grocers and meat dealers conventions with iced displays and as a result a number of vegetable and meat cases had been sold. Mr. Hoff also pointed out a development leading to a new market for ice. A large vegetable cannery operating in the Milwaukee territory has found it necessary to store carrots and beets in the field and this offers a market for a considerable amount of ice used for top icing of these vegetables.

Miss Muriel Washburn, Florida Ice Association said one of the outstanding accomplishments in Florida was the good result obtained from the ice marketing schools. They expect to continue these schools, also to hold an engineering school and a school for merchandising. Their annual convention concluded a few days previously was very successful and the registration was slightly more than last year.

V. A. Esphorst of the Missouri Association said that they had held a very successful merchandising meeting in September and expected to hold another one in the spring. He also reported ice sales in St. Louis off about 27 percent over last year but the warm weather during October and early November, he thought, would bring it up.

Wm. D. Wright of the Illinois Association reported the usual successful manufacturers conference and two merchandising forums, both of which had been productive. Some members of the Illinois Association, he said, are diversifying successfully, some smaller plants are merging with bigger plants and some of the smaller plants are being shut down. But his observation had been that wherever a manager made a sincere effort to carry on a merchandising program, ice sales had been above the average decrease of the year.

Raymond T. Wilber of the New England Association expressed the opinion that the big reason for decreased tonnage is lack of merchandising. He called attention to the recent opening of an appliance store in Providence, R. I. and said that the reaction has been very encouraging, inasmuch as this store has sold more ice refrigerators than any other single item. Throughout his territory, he said, it was his opinion that the biggest problem in the ice industry is the lack of proper merchandising by the managers.

R. N. Milling, Delta States said that while the weather had caused decreased sales in his section, this same weather had also affected mechanical sales and he thought that with better weather, the sales curb would go up satisfactorily. Merchandising conferences by the Delta States had produced good results but in too many cases those who attend these conferences are not allowed, because of indifferent management, to carry these ideas into effect. If every ice plant owner in the country would attend one of these merchandising schools, the ice industry would be revolutionized, he said.

Others who spoke, touching on conditions in their section, were: L. C. Powell, North Carolina Ice Association, Mrs. Edna Vaughan, Delta States and Miss Burdette Binnings, Southwestern Ice Manufacturers Association.

Cape Cod Ice Dealers

THE Cape Cod Ice Dealers Association started its fall activities by having a well attended meeting in Harwich, Mass., on Oct. 5, under the leadership of its President W. A. Peirce. O. C. Robsham of the Hyannis Ice & Freezer Company was elected secretary and treasurer to fill the vacancy of Harry Drew who resigned from holding office but who is still a member of the association.

Ray Wilbur of the New England Ice Dealers Association was guest speaker of the evening and gave a very interesting talk on functions of the ice dealer and how to meet today's mechanical competition.

Mr. Peirce gave an illustrated talk on "What's the Matter with the Ice Business" and told how sized ice increases business even to mechanical refrigerator users.

It was the opinion of the majority present that there is a need of finding new outlets for ice which they felt could be accomplished through a strong association.

Canadian Association Holds Annual Convention

WHEN the proposal was first made to hold the 29th annual convention of the Canadian Association of Ice Industries in the City of Quebec, there was some hesitation because of the distance some of the members would have to travel. But it was conceded to be the best convention the association has ever held. Even the business sessions seemed to have a greater value in this new and interesting environment. The convention was held at the Chateau Frontenac Hotel, Quebec, November 7 to 9.

Members and guests of the association enjoyed the opportunity of seeing the ancient city of Quebec with its reminders on every hand of Canadian history. There was general appreciation of the hospitality of the French speaking compatriots.

Business Sessions

The business sessions were held during the forenoons of the three days. There was free discussion of the various topics, presided over by a French and an English speaking chairman. Chief emphasis was on the production and sale of ice refrigerators, adequate training of employees and the use of automatic ice vending stations. A merchandising forum the second day covered a wide range of selling and advertising activities. An employee relations session the third day covered the training of men, working conditions and building employee morale.

The social highlight of the convention was the dinner for representatives and their ladies. The guest speaker was M. Armand Viau, Industrial Commissioner for the City of Quebec, who spoke both in French and English. Mr. Viau spoke briefly of the stirring days when the first fort and settlement were established by Champlain and of the consistent progress and present-day expansion of industry and commerce. He sketched in also the broader aspects of Canadian national life and the place which the ice industry might serve in the betterment of the community.

Mrs. Bernard Fortier, wife of the Quebec representative, was hostess at a luncheon for the ladies, and Mrs. Gerard Brunelle of Montreal gave an afternoon tea.

Officers Elected

Hon. Pres., H. J. Fairhead, Toronto.
President, C. W. Goodrich, Vancouver.
Vice-pres., W. W. Staples, Toronto.
Treasurer, J. E. T. Dade, Toronto.
Secretary, Mrs. Mildred Croft, Toronto.

Indiana Association of Ice Industries

ROBERT W. WALTON, Exec. Secy.

ON DECEMBER 6, 1950, there will be a management meeting for the Indiana ice industry open to all ice company executives who are directly responsible for ice properties in Indiana. The purpose of the December management meeting is to discuss plans for 1951 in all phases of ice plant operation. An important part of this managers meeting will be a panel consisting of leading operators in the state who will discuss plans for their companies in 1951.

This panel discussion will be followed by an open forum session when all in attendance will have an opportunity to discuss their individual problems and make any suggestions that might be helpful to the group. This management conference is the first of its kind to be scheduled for Indiana, and it is hoped that it will be helpful in enabling ice plant operators to plan their 1951 program.

Commencing January 1, 1951, the Indiana Association of Ice Industries will offer its membership a group insurance plan. Group insurance, long a valuable program offered to employees by the larger companies will now be available to small companies who would not under ordinary circumstances be in a position to take advantage of group insurance. Group insurance for individual member companies will be written on the strength of a master policy retained in the Association office. Only members of the Association are eligible for this insurance plan, and it is felt that this new activity will contribute much to the stability of the Indiana Association of Ice Industries.

The Indiana Association of Ice Industries in cooperation with the Indiana University Department of Distributive Education will again offer a training program for ice service men to its members. This training program conducted by G. Elwood Hookey of Indiana University Department of Distributive Education will emphasize service and customer relations. It is expected that this training program will be carried to approximately 75 per cent of the Association membership and will cover a period of about three months. A similar program was offered to the industry in 1950 and was received with much enthusiasm and it is hoped that similar results will be experienced in 1951.

In connection with the Driver Training Program the Indiana University Department of Distributive Education will also conduct a short course in Supervisory Training for Ice Plant Personnel who are in supervisory positions. The course will be conducted on the Indiana University campus at Bloomington.

Ice Man Gives Facts on Costs of Refrigeration

RECENTLY a reader of The Montgomery (Ala.) Advertiser wrote a "letter to the editor," complaining about high electric rates. This was followed by a letter from a representative of the local power company, purporting to show that electric refrigeration is cheaper than ice. And then Jack P. Gwin, manager of Phelps & Gwin Ice Co., Union Springs, Ala. got into the discussion with another letter refuting the claims of the power company representation. His letter follows:

Since the cost of ice and electric current has been brought into the recent discussion of REA and Alabama Power Co. rates, I would like to compare the two types of refrigeration received from ice and mechanical refrigerators and discuss also the costs involved.

Meats, poultry, fresh produce and practically all fresh foods enjoyed by the average family are composed of a large percentage of moisture. Under ordinary dry-cold mechanical refrigeration, this moisture is sucked out of the foods, forming a frost on the coils of the freezer compartment. The edibles lose their natural firmness and vitamin content. But in the modern, air-conditioned ice refrigerator, a perfect balance of moisture plus cold is provided. Foods actually stay fresh days longer, because their natural moisture is supplemented by the moist-cold air of the ice refrigerator.

Strong food flavors and odors are picked up by the circulating air of an ice refrigerator, deposited on the moist ice and carried out the drain, thus preventing transference of odors. There is no drain in any other type of refrigerator and no way for odors to be removed.

A comparison of ice and current costs alone does not give a true picture of the economy of using either type refrigerator. An economy study of the two types of refrigerators follows: Current costs are taken from the table of REA rates for refrigerators. Ice costs are figured at 50 cents per hundred pounds based on coupon book rates; thus 675 pounds per month would be $3.37 per month. Coupon books may be purchased which would bring the cost down to $2.70 per month. A five-year period of depreciation is taken for this comparison.

	Ice Refrig-erator	Mechanical Refrig-erator
First Cost	$90.00	$250.00
Depreciation (5 yr.)	18.00	50.00
Operating cost	40.50	22.32
Interest on Investment at 6%	5.40	15.00
Yearly maintenance at 2%	1.80	5.00
Total cost per year	$65.70	$92.32

We see that on the basis of ice and current costs alone, it would appear that electricity does the job cheaper. A look at the whole investment involved in each case shows ice to be the cheapest, with added savings in foods kept fresher longer.

We hope that in fairness to the ice industries in Alabama, you will publish this letter in your editorial column.

Jack P. Gwin, Mgr.
Phelps & Gwin Ice Co.
Union Springs, Ala.

Florida Engineering Short Course

A SHORT course for ice plant operators sponsored by the Florida Ice Association and the University of Florida will be held at the University of Florida, Tallahassee, December 11-13, 1950. Professor Ebaugh, Dr. A. P. Black, C. T. Baker, Bert Murray, Frank Cramer and Ed Hill, some of the men who did such an excellent job on the first short course last year will be back. In addition there will be new authorities on added subjects. Registrations are being received.

Porter to Direct Ice Sales For Polar Ice & Fuel

HERBERT PORTER, formerly of Atlanta, Ga., has joined Polar Ice & Fuel Co. of Indianapolis, where he will serve as superivsor of ice sales of the north side plant. Mr. Porter has a wide background of experience in the ice business and appliance field, having served from 1928 to 1942 as division manager of New England Cities Ice Co. in Nashua, N. H., and Lawrence, Mass. In 1942 he was instrumental in organizing the Modern Ice Center of Atlanta, a project of seven ice companies of that city, and while there conducted a market analysis for commercial ice trade. In this work he was assisted by Mrs. Porter (Effie McClanahan). From 1945 he was connected with Yancey Co., distributors of appliances.

Weatherred Increases Duties With Insurance Company

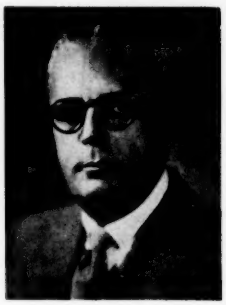
AN announcement by P. A. Weatherred, executive secretary and counsel of the Southwestern Ice Manufacturers' Association states that he has become senior vice-president and counsel of the International Fidelity Insurance Co. For the last few years he has served the company as legal counsel. This more active participation in its affairs however will not interfere with his activities and responsibilties in the ice industry, and he will continue to serve the Southwestern association as he has been doing for many years.

Missouri-Kansas Joint Convention

THE Kansas Association of Ice Industries and the Missouri Ice Manufacturers Association will hold a joint convention at the Hotel President, Kansas City, Mo., January 8-9-10, 1951. The officers of the two associations have guaranteed the meeting will be one of the most outstanding icemen's gatherings that has ever been held in this section of the country. A program that will be interesting to all has been arranged. All Missouri and Kansas ice men are asked to mark these dates on their calendar —January 8-10, 1951.

Prager and Wissing Join S & S Vending Machine Sales Staff

THE S & S Vending Machine Co., San Jose, Calif., as announced by Donald S. Scott, has added to its staff, Daniel A. Prager former director of the Personnel Training and Marketing Department, National Association of Ice Industries and Clem B. Wissing, formerly secretary and sales manager Ebner Ice & Cold Storage Co., Vincennes, Ind. Both appointments are effective January 1, 1950.



Daniel A. Prager

Mr. Prager will be eastern sales manager, covering 37 eastern and middle west states with office at 1011 North Highland St., Arlington, Va. Mr. Wissing will handle sales work for the company with no restricted territory. His office will be at 702 North Sixth St., Vincennes, Ind.

Mr. Prager's business career began as a teacher of business subjects in a Midwestern college. Following that he became executive secretary to J. Frank Grimes, president and founder of the Independent Grocers' Alliance (I.G.A. Stores), Chicago, Ill. After a number of years with this organization, he was appointed in 1937 as secretary-treasurer of the Missouri Ice Manufacturers Association and the St. Louis Association of Ice Industries. He has been in the ice industry since that time with exception of two years' service in the Judge Advocate's Office of the Army Air Force, and since early 1946 he has been with the National Ice Association.

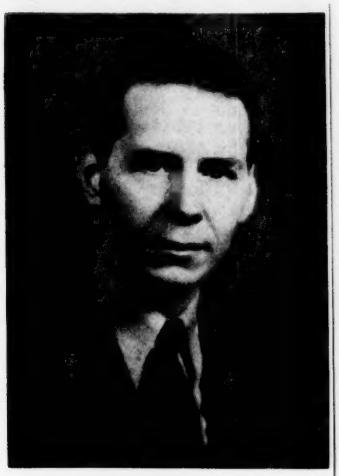
Mr. Wissing was born in Vincennes, Ind., and graduated from the University of Illinois with degree of Bachelor of Science in Mechanical Engineering in 1911. His mother was a daughter of John Ebner, Sr., who founded the John Ebner Ice Co. in 1885 and which later became the Ebner Ice & Storage Co.

Clem B. Wissing

In 1912 he returned to Vincennes as manager of the Citizens Ice & Cold Storage Co., a competitive plant acquired by the Ebner interests. Later he entered the main Ebner plant as superintendent of cold storage and ice distribution. He served during World War I in production work at Indianapolis and later with steel fabricating plants and automobile and truck manufacturers. In 1934 he returned to Vincennes as secretary and sales manager of the Ebner Ice & Cold Storage Co. and had filled that position since that time. He has been an active member of the Indiana and the National Association of Ice Industries. About 1939 he served as chairman of the Distribution Department of the National Association.

Practical Refrigerating Engineer

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS



Emerson Brandt, Chicago, Ill.
Secretary, National Association Practical Refrigerating Engineers

NEWS
OPERATING
MAINTENANCE
QUESTIONS -- ANSWERS

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EXECUTIVE OFFICE
EMERSON BRANDT, *Secretary*
435 North Waller Avenue
Chicago Illinois

Modern Industrial Lubrication Materials

The material in this article was extracted from the paper presented to the New Orleans Chapter, N.A.P.R.E. It was prepared by the engineering department of the Keystone Lubricating Co. and given in the form of a lecture-demonstration by Herman A. Tucker, representative of that company.

TODAY the lubricating engineer and master mechanic has at his disposal a wide variety of semi-solid and fluid lubricants—the former are known as "greases" and the latter "oils." There is however, a group of liquid greases known as semi-fluids, which combine the fluidity of an oil, yet have the resistance to thinning out under heat pressure as do the heavier semi-solid greases.

"Grease is defined as a combination of petroleum oils, fatty materials and chemicals. Upon the selection and segregation of the raw materials and the methods of processing, depend the type of finished product and its suitability for specific applications."

For years, until the nineteenth century, the science of lubricating oils was further advanced than that of grease manufacture. Greases had relatively no status as lubricants and their use was loudly condemned by lubricating oil producers as being unfit for use on fine machinery.

Method of Manufacture

The manufacture of grease is one of the most scientific operations performed by lubricant manufacturers because the proportion of ingredients used must be very accurately controlled, the reactions involved are entirely chemical in nature. Even though the rate of reaction, amount of ingredients and their purity are carefully controlled by modern weighing and measuring devices, and scientific laboratory control, a certain amount of "art" is required in the manufacture of grease to impart to them the exact texture and other physical properties desired. It is for this latter reason that expert greasemakers in cooperation with trained laboratory personnel are required to produce high quality greases.

The greasemaker, for example, must know exactly when to add each ingredient for greases are very sensitive to small deviations in manufacturing procedure and it is possible to produce two greases both containnig the same amount of each ingredient, but having dissimilar characteristics and service capacities, by changing the manufacturing procedure slightly. Proof of the rigid quality control used by modern manufacturers is exemplified by the outstanding performance of greases in service.

Development in the mechanical field has brought about many specialized greases, each made to fulfill individual requirements, (such as acids, alkalies, water, extreme loads, etc.). So exacting have these requirements become that we find it necessary to make over 300 varieties.

No single grease has been developed which might be termed the "Universal Grease" although this is the ideal goal of every grease research chemist.

Progress has been made in this direction and today greases are on the market which would have been considered impossible to make several years ago. Greases, without reservation, can be said to be one of the major contributions to the present high degree of efficiency and simplicity in design of modern machinery.

Without greases, housings of bearings normally grease-lubricated would have to be made oil tight; seals would have to be improved to preclude ingress of dust and dirt; inaccessible bearings would have to be reached either with hand oilers, or by use of oil lines; bearings would have to be lubricated at more fre-

quent intervals, with extra labor cost; and the dripping or spattering of oil would impair appearances, contaminate material in process, and, create fire hazards. The expense of applying a lubricant is 3 or 4 times greater than the cost of the lubricant actually used.

The fact that greases have achieved such popularity in modern industry is due entirely to the fact that they provide more economical lubrication under a wide majority of applications. Even where fluid lubricants are essential, many times a liquid grease will serve more efficiently and economically than conventional oils.

Types of Grease

Greases are generally classified according to the base materials employed in their manufacture. The earlier greases were made from animal and vegetable oils with a lime soap base, sometimes called Calcium. These products left much to be desired because of their narrow operating temperature range. Some types actually required frictional heat to cause them to flow, while at the same time their melting points were as low as 150 to 160 F. They also were subject to rancidity and required the use of deodorizing oils.

The original lubricant introduced by our company in 1884 was a calcium base, petroleum product. Its melting point of 180 F and low coefficient of friction brought about notable improvements in bearing life and power savings. From the beginning of manufacture, it met with the strong approval of American industry.

During the early years of this century increasing numbers of ring oiling bearings, requiring fluid lubricant, were being installed on line shafting, electric motors and other equipment. To overcome the drippage of conventional oils, with attendant product spoilage and creation of fire hazard, liquid greases were developed. Through the intervening years the use of these products has been extended to other enclosed equipment including textile comb boxes, electric tools, crane wheel journal boxes, etc

Soon conditions arose which required lubricants to meet higher operating temperatures with melting points of approximately 350 F. Outdoor winter operations and the development of modern refrigeration and aeronautical equipment brought about further requirements and greases made with bases containing lithium, aluminum, barium, etc., were developed to meet the extremes of operating conditions.

Here are some characteristics of the several bases; *Calcium Base Greases* are primarily Cup Greases. Their texture is usually smooth and buttery. They are widely used in industrial plants as a general lubricant on plain bearings, sliding surfaces and lightly loaded ball bearings revolving at normal speeds. While having a 180 F melting point, their maximum operating temperature is about 140 F. They are water repellent.

Aluminum Base Greases are characterized by their transparency, smooth texture, adhesiveness and exceptional ability to resist water. They are preferable for chassis lubrication on cars; oscillating surfaces, gears, chains, cams, etc., of textile machinery and certain types of canning, dairy and brewery equipment. Their melting point is approximately 240 F and cold test 0 F. Their maximum sustained working temperature is approximately 175 F. While being suitable for anti-friction bearings they are not recommended for high speed applications.

Watch For the

Special NARW Pre-Convention Issue

Ice and Refrigeration January, 1951

Sodium Base Greases. One of the most important properties of greases of this type is their excellent heat resistance. They also have good oxidation resistance, a characteristic often improved by incorporating oxidation inhibitors. (The employment of these will be described later.)

Another advantage of Sodium Base Greases is their anti-rust properties. They have the ability to absorb a certain amount of water which might be present due to condensation or contamination. Water resistant greases do not absorb moisture. Sodium Base Greases have melting points of approximately 350 F, some having below zero cold tests. The maximum temperature working range is approximately 250 F.

Lithium Base Greases are low cold test and high melting point types; their operating range is from minus 65 to approximately 200 F. In some cases such as steam flows of canning machines, where grease is re-applied at frequent intervals, temperatures of 250 F are sustained. They are water repellent and very adsorptive, (not absortive) the latter denoting ability to adhere to and thoroughly "wet" a metal surface.

Barium Base Greases. This type lubricant has been designed for water repellency and heat resistance. They have melting points of 350/360 F and ability to resist squeezing out under shock loads.

While on the subject of bases, let us emphasize that in the manufacture of grease lubricants, it is not always practical to employ a single base material. More often than not, a mixture of several bases is necessary to accomplish the desired result. Obviously then, from the user's standpoint, the base classification, in itself, is not necessarily indicative of a lubricant's performance.

Special Lines

Recent trends toward higher operating temperatures have emphasized the need for lubricants with greater heat resistance. To meet these requirements new lines of special high temperature lubricants have been developed.

Silicone Greases: The use of silicone varnishes and glass fiber insulating material permits an increase of 50 percent in the power-per-pound ratio of electric motors. The added overload protection afforded, results in higher operating temperatures.

Motors running under these conditions require bearing lubricants with greater heat stability than conventional petroleum greases. One of these undergoes practically no change in consistency up to 550 F and will function down to 10 F (a companion remains plastic to minus 40 F). Both are highly repellent to water—hot or cold, (boiling water has no effect upon them) acids and corrosive atmospheres.

Tests have indicated that another grease of this type will give phenomenal results in the lubrication of contacting metal surfaces in any high temperature areas to which anti-friction or plain bearings ordinarily are exposed. It is recommended for speeds not in excess of 2,000 rpm.

A third grease in this group is non-volatile (won't evaporate), non-gumming, non-sludging and non-oxidizing; a combination of characteristics not had in petroleum products, and it has far more durability in service than petroleums. It is used at speeds

up to and above 20,000 rpm, at temperatures of from minus 40 F to plus 300 F. The melting point is approximately 350 F—an excellent long-life prepak lubricant.

Also there is a special petroleum grease of a non-dripping type, especially suited for sustained high temperatures within its working range, also resistance to moisture.

Oxidation Stability

In our description of Sodium Base Greases, we stated that the performance of these greases should be improved by incorporating Oxidation Inhibitors. Stability in storage is of utmost importance to the user. Stability depends primarily on the quality of the ingredients used and the thoroughness of the manufacturing process.

For years there was no method to determine the stability of the grease in storage other than to put it in a ball bearing and store it on a shelf at room temperature, and inspect the bearings from time to time and see whether they could be turned without binding or having a gritty feeling.

Eventually the Norma-Hoffman Oxidation Test was developed and through this an accelerated test became available which would indicate the possible storage life of a grease.

The test apparatus consists of a Steel Bomb immersed in a constant temperature bath. Specimens of grease to be tested are put in glass dishes and placed in the Bomb. After the cylinder cap is secured, oxygen is introduced at 110 p.s.i. and the Bomb placed in the bath at 210 deg. F. The duration of test is 100 hours and the allowable pressure drop is 5 p.s.i. If a grease meets this test it can be assured that a storage life of 3 to 5 years will be obtained without danger of decomposition occurring.

Refrigeration Holds Prices

ANYONE who remembers the nickel soda or sundae is likely to be in the grandfather class and it has been a long time since most of us took a nickel street car ride. Yet the 5-cent candy bar is still with us. The Mars Candy Co., Chicago, turns out millions of them each day.

The price of chocolate, sugar and other ingredients has multiplied, yet they continue to give good quality for the same price. Much of the credit goes to refrigeration which has speeded up the processes and multiplied output per man hour enormously. One principal factor is the cooling of the finished candy bars in a tunnel operated -5F. This prepares the candy for wrapping machines which turn out 7,200 bars per hour.

N A P R E

Question Box

H. G. Venemann, Professor of Refrigeration, Purdue University and chairman of NAPRE Educational Committee, answers members operating problems monthly in this column. Send questions to Chairman H. G. Venemann c/o Purdue University, West Lafayette, Indiana.

Contamination of Lube Oil

Question No. 865: One of our ammonia compressors with new bronze inserted cast iron rings installed last winter had been running 52 days when the oil in the crank case turned very dark. The oil was cleared up with an oil purifying unit without stopping the compressor and the results were very good. The oil remained clear for three weeks and then became very dark and cloudy in appearance as before. What do you think is causing this condition and why does the compressor run so long before the oil is affected?—F.C.

ANSWER: We are indebted to Bert McKenna of San Francisco, a member of our Board of Directors, for the following answer. If anyone has a different answer please send it in.

"In answer to Question 865, let us analyze the first part of the question: What do you think is causing the condition?

"In my experience on this same condition, I have found excessive head pressures when running compressor with too high a compression ratio, causes the oil to carbonize due to high compression temperature. The carbon then follows through the system to the low side, or evaporator coils, there to mix with oil and graphite. The graphite is known to enter the system from rod and stem packing, and this becomes the source of the residue that darkens the oil.

"In answer to the second part of the question, why does the compressor run so long before the oil is affected? We know that some of the carbon that darkens the oil will pass the rings and wash down to the crankcase with the oil, but this darkens the oil gradually. If the oil in the crankcase of the compressor darkens in a short period of time, this is caused by carry-over of liquid ammonia, or highly saturated gas, to the compressor, bringing with it the carbon and residue from the evaporator coils, then settling into the crankcase of the compressor. If a recording thermometer were placed on the compressor, you would find that each time the oil turned dark the recording chart would have shown a drop in discharge temperature, proving that the saturated gas has entered the compressor, carrying with it the cause of your trouble and reason for long runs before oil is affected."—Bert McKenna

Does Oil Tend to Remain In Evaporators?

Question No. 866: In a refrigerating plant where there is no oil separator on the discharge gas line between the compressor and condenser, oil gets into the system, causing improper operating conditions when ammonia is the refrigerant. Is there any practical and economical way to remove the oil from the liquid refrigerant during normal operations? Will the oil in the evaporators eventually be removed after several hot gas defrosting operations?—S.L.C.

ANSWER: In the 1945 Operating Data Book F. W. McKenna has the following to say about oil in an ammonia system.

"Oil used to lubricate the compressor must be selected carefully no matter which of the refrigerants is used. The manufacturers who supply oil for refrigerating systems have made rapid strides in this field in the past few years, and generally their recommendation can be followed safely, provided that they have all the facts. No longer is the specification 'ice machine oil' sufficient in itself.

"The evaporator temperature, discharge vapor temperature, and bearing load data must all be considered in selecting the proper lubricating oil for a particular system. Of the refrigerants considered here, ammonia is in a class with itself, as it has little effect on oil. As it is not miscible with oil, it is very important that, first, an otherwise suitable oil with as low pour point as possible should be chosen; and, second, an efficient discharge vapor oil separator should be used.

"Removal of oil from the discharge vapor will also help to keep the condenser performance high by preventing oil-fouling of the tubes. Following these precautions, the limited quantity of oil that does get into the evaporator can be most easily removed. If oil does collect in the evaporator, as it eventually will, the simplest way to remove it is to warm up the evaporator and drain it off.

The oil problem in an ammonia system increases in magnitude as the evaporator temperaure is lowered."

In the 1944 Operating Data Book, the late A. L. Blatti treats of Oil Separation and Removal. Mr. Blatti emphasizes the need of an oil separator in the discharge line and recommends one containing water tubes so that water may be warmed for general plant purposes while lowering the gas temperature sufficiently to assure separation of the oil.

McKenna and Blatti both recommend oil drains in the evaporators to enable the operator to drain off the oil at regular periods. The evaporators mentioned in their articles are of the type which are immersed in brine and consequently are not connected into the hot-gas defrosting system. Evidently the type of evaporators that S. L. C. has in mind are of the coil type. I know of no practical way to remove the oil from coils during normal operation. Of course, if the velocity of the ammonia within the coils is sufficiently high, and the oil is of a quality that will permit it to flow easily, the part of the oil will return to the compressor unless it becomes trapped somewhere along the line.

On the other hand, if most of the oil can be forced out of the coils by hot gas defrosting operations, what is going to prevent it from accumulating in the coils again and again unless a trap is installed in the discharge line? What is S. L. C.'s objection to installing a first class oil separator?—H.G.V.

Pump Selection

Question No. 867: When selecting a centrifugal pump for an application requiring a varying capacity, is it best to choose one that has its maximum efficiency at the maximum capacity required?—M.P.

ANSWER: When selecting a centrifugal pump which will operate at varying capacity, it is advisable to select one that has its maximum efficiency at the capacity which will be needed over the longest period of time. It is possible to buy a pump that will operate at near peak efficiency between 40 percent and 78 percent of full capacity. The volute centrifugal pump is better designed for variable capacity than the turbine type.

I trust no one will confuse efficiency and capacity in a quick glance at this question. Any pump chosen must fulfill peak capacity requirements.—H. G. Venneman.

New Questions

Suction Frosted Back

Question No. 868: We have been troubled with wet gas coming back to the compressors as described in Question No. 6—Page 61 of the 1950 Operating Data Book. You gave your answer based on the information furnished to you at that time. Apparently I did not tell you that the installation had evaporator pressure regulating valves in the suction lines from our 5 cooler storage rooms. Further study of our system shows that the accumulator may be at fault in returning wet gas to the compressors. The suction connection to the compressor takes off from the top center of the accumulator dome but the riser bringing suction gas from the evaporator header enters the accumulator at one side just below the dome. Thus the gas discharged from the evaporator enters the accumulator only 3 or 4 in. below the suction line to the compressors. It appears to me that this arrangement of the accumulator connections could permit wet gas to be carried straight through the accumulator to the compressors. What do you think of this and what remedy would you suggest? —H.V.S.

Scale Removal

Question No. 869: Your recommendations on a condenser scale problem would be appreciated. There are four horizontal shell-and-tube ammonia condensers 15 ft. long, each with 27 tubes. After one year operation a reduction in efficiency was noted and it was determined that the tubes had scale about 1/16 in. thick on them. To remove the scale we circulated dilute hydrochloric acid through the tubes by means of centrifugal pump for a few hours. Apparently little of the scale was removed. Chipping of the scale seemed too laborious and almost impossible due to the length and the number of tubes involved. What is the best method to use for removing this scale?—P.K.S.

Temperature Rise Through Condenser

Question No. 870: In our dairy plant we have 4 stands of double pipe condensers which have 1¼ in. water pipes with a total length of 560 feet. The water going through in the summer takes a 16 degree F rise. This rise would be all right for well water at 55 to 65 F but we use a cooling tower which cools only to 80-85 F in the peak season. Our condensing pressure therefore runs quite high. Our cooling tower is shot. When we replace it should we put in a larger tower to handle more water? How much temperature rise should the water have in passing through this condenser for best overall results.—A.L.T.

Cure for Condenser Tube Corrosion

IN REGARD to your question 861, we have had similar trouble as mentioned in the question with the tubes being eaten by the chemicals in the water in a short period.

Two and one-half years ago we coated the inside of the tubes and the ends with the use of a makeshift plunger being sure that the coating was thick especially on the ends where the gasket material touched the tubes.

The substance used was a Texaco product called "Compound L". It looks like a very thick grease and in order to make this "dope" more fluid we heated it until it became a thick liquid. This is necessary because by the time the plunger is pushed through the end of the tube the dope is solid and will not stick to the tubes.

The results have been far beyond our expectations in that time there has been absolutely no corrosion whatsoever with our thumbprints still in the dope at the ends of the shells after a continuous stream of well water passing over for a period of at least ten months.

The first time we used the compound it took about one quart for each pass through with tubes with one week between the first and second coats allowing for possible drying. Since this time we find that no time is necessary because this dope does not dry in the usual sense of the word. In the succeeding years we have doped the tubes every year, but this action does not seem to be necessary and is done as a precautionary measure only.

Since we use our condenser water only once it is impossible to predict the effects in a cooling tower system, but the "dope" seems to be a product which will stick to the tubes if it is applied under favorable conditions. The only disadvantages are that it raises the head pressure a few pounds and will not wash out of clothes.

If you have any questions to ask please do not hesitate to write and if I can help you I will do so. Word of the substance has spread throughout this territory and maintenance problems of the nature of replacing tubes through corrosion has been practically halted.—JAMES S. BOARDMAN, Columbus, Ohio.

News Notes and Activities of Chapters

Los Angeles

By Fred Herr

THE October 18 meeting of Los Angeles Chapter, held in the Terminal Club, East 7th Street and Market Place, was featured by an entertaining and educational talk on conditions in the Philippines and Far East by H. G. Lyman, Los Angeles Chapter's peripatetic member.

Mr. Lyman—"Abe," as he is called in a take off to his celebrated namesake, of musical fame, has been a member of California No. 2 for many years but has spent a great portion of the past decade down beyond the equator. In an informal talk he gave the membership his impression of the sections of the Orient in which he spent many years of his active career.

W. R. Burnett, membership committee chairman, presented another of his dramatic membership reports which left no one in doubt that the membership committee—local as well as national—has been hitting the ball during the summer. A block of 25 new members was initiated into the chapter enmasse at the October 18 meeting. This brought to a total of 71 new affililates to Los Angeles Chapter which can be counted in the national campaign, although the chapter's own drive will continue until a few days before the national convention opens in Hollywood.

Of the 71 new ones, the Independent Team accounted for 47 and the California Consumers aggregation for 24. Top man in signing up new members was Donald Byl of Union Ice Co. with 19 to his credit. Runner up was V. A. Stubblefield of Pacific Fruit Express with 16, and Clifford C. Nordholm of Baker Ice Machine Co., third with 10 new members. Eighteen others brought in from 1 to 2 new ones each.

The October 18 preliminary class was conducted by George Paulick. Miscellaneous matters of practical refrigeration problems were undertaken in the hour's discussion.

Members of Los Angeles Chapter enjoyed two deep-sea fishing trips during the past summer—one on August 16 in which 16 members and friends took part, and another on September 9 to take care of the overflow which could not be accommodated on the boat in August. "Admiral" Frank Hooper and "Vice Admiral" Rudi Kettler made all the arrangements and arranged so well that the participants had a really good time and every one enjoyed the trip except the albacore.

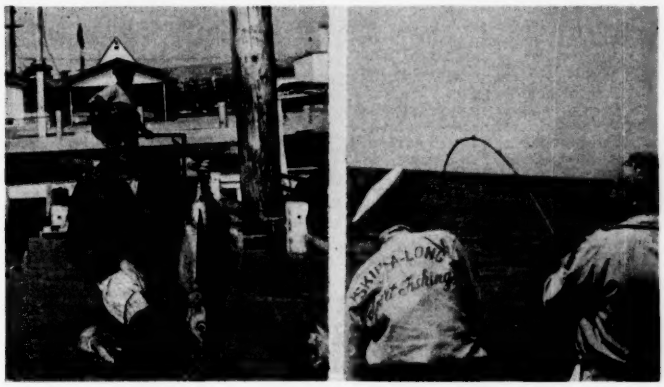
Both voyages were made in the good ship *Skipalong* out of Newport Harbor, with piscatorial operations centered somewhere between the Southern California mainland and Catalina Island.

When Los Angeles Chapter compiles its membership index booklet in the spring of each year, it makes it a practice of including up near the front of the booklet an advance schedule of the educational programs that are to be presented on the different meeting nights of the forthcoming year.

For some meeting nights only the general subject is given, with an explanatory notation as follows "Underwriters laboratory talk—to be arranged by Frank Elliot."

In preparing the 1950 advance schedule, Regis Gubser, chairman of the educational committee, was able to affix an asterisk before seven meeting dates, indicating that those programs had been definitely set and confirmed. On the remaining programs, assigned to Frank Elliot, Mike O'Hara, Herbert Royden, Ed Nelson, Alex Shears and others, the tasks of arranging programs have been carried out in fine fashion. Of 12 meeting programs given thus far this year, Regis has had the good fortune of being able, with the assistance of his sub-committeemen, to deliver the advance-advertised speaker and program in exactly 12 cases. That is what is called batting one thousand in baseball.

This record is so outstanding for effectiveness that the educational committee which achieved it should be identified in its entirety. Headed by Mr. Gubser, they are: Frank Muzzy, Edgar Marrs, Alex M. Shears, Herbert N. Royden, Frank R. Elliot,



The photographs show some of the activity on the September 9 trip. On the pier at the left, Don Clegg proudly displays the 34¼ pound albacore which won for him the honor for the biggest fish caught on that trip. At the right, fisherman Frank Hooper in action at the rail of the Skipalong is busily hauling in on the line which eventually brought to heel a 11 pound albacore.

The group leaning on the rail are Rudi Kettler, James DeLorie, Don Clegg, Douglas Semple and, far right, Ed Boyer.

F. T. "Mike" O'Hara and Hayes T. Cory.

By publishing the proposed speaker and subject in advance, the members are enabled to arrange their affairs to attend meetings that may be of particular interest to them. The subject on the night of November 1 in the Terminal Club apparently had considerable appeal, for some 65 members and guests responded at roll call; this, despite the fact, that the weatherman produced shirt-sleeve temperature on November 1.

The speaker for the night was Herbert G. Ufer, who was introduced by Mr. Elliot as being the western superintendent of Underwriters' Laboratories, Inc. He gave an informative talk on the purposes and functions of the laboratories, elaborating on his talk later with a 16mm. film entitled "Approved by the Underwriters.'

While the film and the talk had little actual reference to refrigeration, ice making or air conditioning, it proved of considerable interest to the membership because nearly every plant operated by NAPRE engineers contains one or more pieces of machinery bearing the familiar UL plate of approval.

Mr. Ufers explained the origins of the laboratories, the purposes for which they were established and how they function today as basically a safety group aiming at maintaining the safety factors of machinery and machinery installations.

With chapter president Dale Rycraft enjoying a late season vacation from his job at the Peterson Manufacturing Company, First Vice-president George Paulick wielded the gavel at the business session. George doubled in brass during the night, for he had spent the entire previous hour, from 7 to 8 p.m. conducting the preliminary class through a session on the subject of refrigeration controls for cooler and freezer rooms.

Action was taken on the induction of one new member (E. G. Verio) and the transfer of another (Thomas H. Farrell) from San Francisco Chapter to Los Angeles.

Chicago

By E. B. Jones

THE engineering course was presented by William Tiffin, Ideal Electric and Mfg. Co., on the subject of "Checking, Adjustment and Operation of Motor Equipment." He first described the different types of motors and how their characteristics of operation were developed. The speed of the motors, it was explained, depends on the cycle characteristics of the current and the number of poles in the motor. This is modified by slip in the case of induction motors which operate at several percent less speed than the synchronous motors. Inspection of the windings, connections and bearings was described and suggestions given for proper care.

The feature of the evening was a panel on motors and controls which was composed of Peter Loewe, Triad Engineering Co., Jay Watson, Ideal Electric and Mfg. Co., and Mr. Tiffin. The leader was President Leslie Clifford. A number of questions on motors, power supply, starting equipment and other phases were submitted by the audience and answered by the panel. A great deal of ground was covered on numerous items of interest. Mr. Loewe reported that motors made in Europe have a permissible temperature rise of about double what is standard in this country. By this means the size of the motors is considerably reduced along with their initial cost. He discussed the trend toward ball-bearing motors especially in smaller sizes and told about some of these motors which had run as long as 6 years under full load without being stopped once.

Among other things Mr. Watson discussed methods of grounding motors and electrical equipment to provide safety for the operators. Mr. Tiffin discussed starting characteristics and told how the starting current compared on various motors. He also explained power factor in simple terms.

The program was concluded with the showing of a number of slides depicting interesting installations of Ideal electric equipment.

The meeting of November 7 was opened with a movie on construction and operation of steam turbines furnished through the courtesy of the Westinghouse Electric Corp. The subject of the engineering course was prime movers including turbines, engines and internal combustion engines. In presenting this subject, A. R. Carlson, Railways Ice Co., emphasized the dependability of steam turbines and engines if they are properly maintained. Of course in this case the prime mover is not self sufficient but must have steam generation equipment.

On the subject of internal combustion engines, Mr. Carlson emphasized good operating care and regular maintenance. The choice of lubricating oil was also classed as very important because experience was stated to show how an oil that gave good service in one engine would prove unsatisfactory in another. No overall basis of choice was given because it was stated that experience appeared to be the best guide. Good, well informed operators Mr. Carlson said, are essential to reliable and economical operation of the prime movers discussed.

The special subject for the evening was "Longer Life for Refrigerating Engineers." It was an analysis of accidents and how to avoid them presented by Emerson Brandt, former chairman of the Refrigeration Section, National Safety Council. He drew material for his subject from a file accumulated through more than 20 years of work in accident prevention and suggested that one way to live longer and enjoy life all the while is to avoid accidents. Because many people in industry do not recognize potential sources of injuries, Mr. Brandt reviewed a number of accidents which have occurred during recent years. The causes of accidents were discussed and suggestions were given for avoiding similar occurrences. Attention was called to the recently revised Safety Code for Mechanical Refrigeration and it was suggested that this code be consulted and followed to obtain built-in plant safety. On the other hand, Mr. Brandt stressed the fact that intelligent operation and respect for safey precautions take first place in the prevention of injuries and accidents.

Memphis

By Charles Conley

Chief Engineer, R. E. Larkin of T. J. O'Brien Engineering Co., gave a talk on heating and ventilating. He outlined the various types of heating and ventilating systems and explained that every job should be suited to the requirements and the purposes for which it is used. The various types of air filters were described and their applications pointed out. Mr. Larkin said that the section of the country has a lot to do with the type of system to be used. Panel heating is coming into wide use especially in industrial plants such as machine shops and assembly plants. He was strong on good housekeeping and regular maintenance. With good housekeeping fire hazards and accidents are kept down and maintenance is always less of a problem.

A talk on compressors emphasizing the turbo vacuum type was presented at the next meeting by E. G. Woodson, local manager of the Trane Co. The discussion was illustrated with slide pictures and blackboard drawings. J. B. Wilson who assisted told of his experiences with various types and kinds of compressors and described the jobs to which he felt each is best suited.

Chief Engineer Bob Clower of the TVA steam generating plant talked at the next meeting on plant efficiency. He discussed fuel and the use of purchased electric current. Since the price of coal has gone up so much, natural gas is the cheapest fuel; oil is much higher than coal. He explained with blackboard illustrations the reasons why it is always more economical to provide large feeder lines to carry electric power into plants and distribute it to points of use. In addition he showed how capacitors and synchronous motors usually are able to pay for themselves through improvement of the power factor in the plant.

Yakima

By Elmer Toop

Instructor George Tilbury found considerable interest in the question and answer session. Further studies based on the 1950 Operating Data Book were a feature of the next meeting. President Luther Stewart assisted by E. A. Wahlstrom served a Dutch lunch to the group. Additional refreshments were provided by Fred Martin and were enjoyed by everyone.

At the invitation of E. L. Folsom, a visitor, arrangements were made for all chapter members and their wives to visit the Cascade sawmill.

Colton

By H. O. Bonter

WE were pleased to welcome J. N. Berger of York Corporation who came from Los Angeles to present an educational program to our group. A sound motion picture on various types of York ammonia compressors began with the old steam driven machine and moved on down to the latest types of high speed multi-cylinder compressors. It illustrated the floor space saving over the old types and the greater overall efficiency. Mr. Berger gave a talk on compressors, including their design and operation. Then he concluded with question period. The meeting came to a close with the usual refreshments which everyone enjoyed.

At the invitation of the Hanford Foundry Co., San Bernardino, the next meeting was an inspection trip to their plant. The members and friends were met at the gate by A. K. Steger, Vice President, O. Erickson, Metallurgist, E. D. Relph, work manager and W. Francis, clerk. These gentlemen escorted the group through the foundry where many molds were ready for the pour of molten iron or steel. There were many molds some very small and some very large. The castings are made of various kinds of metal. Mr. Steger explained that they will make any kind of casting. They specialize in high class custom castings that are very intricate. Many of their customers are large pump works such as Worthington Pump Co., Pacific Pumps and oil well tools and also castings for oil refineries. The Hanford Foundry is classed as one of the best in the west.

A great deal of their work is for the army and air force. The furnace for melting the scrap iron is all electric. The huge carbon electrodes making contact with the iron melt it ready to pour in two to three hours. It takes an average of 5,000 amperes at 180 volts, costs about 5,000 dollars per month for the electricity. They employ 315 at present but expect in the future to enlarge the plant and that will take more employees. Mr. Steger explained that they were delivering 450 tons of finished castings this month. W. P. Gervey, President was unable to be present and Mr. Steger was host for the evening. About 30 members and friends attended. It was a most interesting, educational and enjoyable evening.

At the November 8th meeting the members and visitors were honored in having National President, E. T. Quinn as the guest speaker of the evening. Two other guests with Mr. Quinn from Los Angeles were V. A. Stubblefield and E. C. Hammersmith. Mr. Quinn gave a detailed talk on the convention to be held in Los Angeles Nov. 28 to Dec. 1. They brought with them a color motion picture from Preco, Inc. titled "Fresh as the Day it was Picked" which was shown to the group. It featured the construction and operation of Preco refrigerator car fans. After the meeting all enjoyed the usual lunch. The meeting was held at the Santa Fe Ice Plant lunch room in San Bernardino. President C. H. Purkiss presided.

Rio Grande Valley

By Armin Doneis

INSTRUCTOR John Muller gave us a discussion on efficient operation of receivers with special emphasis on avoiding loss of the liquid seal. The check valves in gage-glass fittings also came in for some discussion and it was recommended that the shutoff valves in these fittings be left wide open so that in case of breakage of glass the balls would have a better chance to seat quickly and tightly.

At the next meeting Mr. Muller discussed efficient use of power. He analyzed the various factors which influence the total demand and the kilowatts per ton of ice, such as cleanliness of condensers, freedom from foul gas, the use of motors sized to match the machine's maximum steady power demand. Power factor also came in for considerable attention. Then the class was conducted into a discussion of a typical power-consumer's contract showing how an ice plant is billed, and explaining the operation and reasons for certain clauses contained in such a contract.

It was reported that instructor John Muller would be on the list of speakers in a series of meetings in Dallas on October 18 and 19 for the Southwestern Ice Manufacturers Association and will talk on operation and maintenance of Deionizing equipment. While bouquets were being passed around, Mr. Casberg also made some complimentary remarks about an article in I & R magazine on the use of refrigeration in dam construction by Armin Doneis.

The scheduled instruction session about log sheets was postponed in favor of two guest speakers whom Russell Sawyer persuaded to come to tell our members about a friction reducing agent, and they gave an interesting demonstration of its merits. They were Ben C. Mailman and Jack C. McNeely, both of McAllen, representing the Bardahl Oil Co. With the aid of lubricant-breakdown demonstrating machine they showed the operating characteristics of ordinary lubricating oil; then by addition of a small percentage of Bardahl they showed a marked reduction of friction as indicated by an ammeter in the driving motor circuit. Also the bearing surfaces which had been roughened and worn during the breakdown of ordinary lubricant acquired a bright, clean, smooth surface again even with a tremendously increased pressure load on the bearing.

The members present indicated very considerable interest by numerous questions and several of them felt tempted to give the product a practical test in their natural gas engines, and even in ammonia compressors since we were assured that it would not enter into chemical combinations with ammonia any more than ordinary compressor oil, nor does it contain any solvent that would dilute the regular oil.

The chapter appointed A. M. Casberg the official delegate to represent Rio Grande Valley at the national convention in Los Angeles.

San Jose

By Fred Byl

THE first chapter meeting for October was an inspection tour to the Modern Ice and Cold Storage Company plant to see the recently completed addition and observe a large scale fully palletized warehouse.

Attendance was at an unexpected high with sixty-five present. This included nearly 100 percent turnout of our local members, with a few San Francisco visitors in addition.

Three new applications for membership were taken at this meeting.

Our hosts for this trip were Joe Sullivan, Chief Engineer, and John Hatherley, plant superintendent. Inspection was made of the new engine room machinery, precooling rooms, freezer tunnels, and freezer storage. The older sections of the plant were viewed by those who had not previously seen them.

Discussion was informally conducted in small groups regarding various practical and theoretical aspects of the new plant installation. In addition, some of the problems and their solutions found in ten seasons of operation of a single story palletized plant were brought to the group's attention.

This plant has about 2,000,000 cubic feet of storage space with about 90 percent devoted to cooler storage. Machine capacity of 800 tons on high side permits daily receipts of 1000 tons of fruit.

Members were urged to bring in new members and to plan to attend the National Meeting in Los Angeles.

Tacoma

By C. W. E. Johnson

THROUGH the courtesy of the Tacoma Boat Building Co., and our good member, Erling Olsen, refrigeration installation engineer for the above company, the membership had a very interesting and educational field trip. On the ways, there was one 90 ft vessel that had a considerable amount of equipment installed and another 120 ft long that had been launched that was almost completed. For small ships they carry an immense amount of machinery and equipment. The propellers are driven by Diesel engines varying from 200 to 400 hp. There are 100 kw and up Diesel driven electric generators and the boats have from 30 to 50 tons of refrigeration aboard.

These ships are what is called bait boats as the tuna fish are caught on hooks. Some ships use purse seines to catch the fish. Equipment includes four large tanks that are insulated and refrigerated by direct expansion

using galvanized pipe and ammonia as the refrigerant. These ships travel down to the coast of South America for their catches so they have to be very staunch and seaworthy. The fishermen fill the tanks with sardines which they catch on their way to the fishing banks. The bait is put into the tanks and sea water is pumped continuously through the tanks to keep the bait alive. One peculiar thing about the sardines is that the tanks have to be illuminated or the fish will bruise and kill themselves by running into the sides and ends if the tanks are dark.

When a school of tuna fish is found a man broadcasts the live bait from the upper deck and as the fish start feeding they will strike at anything that is moving so fisherman use red feathers tied securely to a barbless hook for a lure. After the fish are caught they are placed in the large tanks. The density of the brine is increased and the temperature lowered to 15 degrees which freezes the fish in about 30 hours. After the fish are frozen the tanks are drained and kept refrigerated until the fish are unloaded.

First Vice President Howard Peterson was a visitor at our meeting. He stated he was glad to have the opportunity to visit the chapter's meeting and hoped to see a large delegation attend the NAPRE Convention at Los Angeles.

Minnesota

By George Gartner

A dinner meeting at the President Cafe gave a good start to the fall program. An additional feature was the showing of 2 movie subjects which the attendants enjoyed.

President Colin McDonald called for a report of the educational committee which was given by Herb Gartner, chairman who outlined the program already planned for the year. There were comments from the floor and suggested changes but as a whole the members present felt that the Board of Directors had done a very good job in their program outline.

The special speaker was Ed Asproth, department head of Dunwoody Institute who gave a very interesting talk on the problems confronted in changing from ammonia to Freon-12 or 22. A lively discussion period followed the talk by Mr. Asproth and the members were well pleased with the meeting.

Fresno

By M. Pedersen

The chapter continued the informal discussion on plant problems. In addition it was decided to present a regular course on refrigeration. The instructor is Thomas Hagar of the Pacific Fruit Express Co., and a member of our chapter. In the beginning fundamentals are being covered because it is desired to have good ground work and understanding before we proceed into the more advanced course.

Pittsburgh

By Otto Knoch

At the recent meeting of Pittsburgh Chapter new officers were elected and an accumulation of other business was transacted. The officers who will serve during the year ahead are:

President, James Gallina
First Vice President, Eugene Luitz
Second Vice President, James Reiter
Secretary-Treasurer, Otto Knoch
Sergeant-at-Arms, Alois Paulmeir

For the first time in 30 years Louis Mantz is not listed among the officers of the chapter. He expressed a desire to retire from office and the chapter followed his wishes.

There were many tributes and expressions of appreciation to Mr. Mantz for his long service in behalf of the chapter and the national organization. In reply Mr. Mantz thanked the group and promised that his interest would continue and he would be available to help out on chapter work when needed.

President Gallina and the other officers pledged their best efforts to provide a really interesting program and to build attendance and participation in the meetings. Some of the details were announced and the chapter is looking forward to the actual events which are planned.

Dallas

By J. Ed Lawrence

The regular meeting of Dallas Chapter was held at the Alford Auditorium. After the meeting was called to order by President Cunningham, a business session followed. Among the correspondence was a special letter of invitation to the Los Angeles Convention which was sent by William Losch of that chapter's convention committee. He recalled memories of his former days in Texas and invited Dallas members to attend the convention.

Various papers in October I & R were discussed by J. Ed Lawrence of the Program Committee. A number of the members joined in to bring out points of special interest. At the conclusion of the discussion, Mr. Lawrence urged the members to read their publications carefully and to keep abreast of the advertisements in order to have the best information on developments in industry.

At the second meeting of the month Elliott Hallowell discussed automatic controls for ice and refrigerating plants.

Stockton-Modesto

By R. M. Edger

The members of the chapter enjoyed a plant visit to the Carnation Co. Milk Processing plant here in Stockton. This plant was opened about a year ago and is a very modern processing plant. It has all stainless steel pipes chrome finished. An acid proof tile floor and tile walls make it very easy to keep sanitary and look very attractive. The engine room was every bit as clean as the rest of the plant and was well designed for easy maintenance. The chapter enjoyed this visit very much and I am sure they gained many ideas on good housekeeping and sanitation from this plant.

Protection During Maintenance Operations

ATTENTION has been called by Leland Kenagy, national treasurer, to information designed to protect workmen when they are repairing, cleaning or adjusting equipment. Many injuries have occurred because machinery has been started while work was being done on it. Sometimes small plants do not take any particular precaution in this respect because all workers usually are aware of the different items of work in progress.

This assumption that the hazard does not exist is frequently shown to be incorrect and injuries result. The National Safety Council has published a data sheet which analyzes the use and value of warning tags and signs to be attached to electric switches. Then it goes on to describe and illustrate a number of clever and effective devices for locking equipment out of service. All are simple and easy to use. The methods are suitable for all types of switches as well as push button controls. The publication is "Methods of Locking Out Electric Switches, Data Sheet D-Gen. 41"—National Safety Council.

Nels H. Rosberg

A BRIEF notice of the passing of Nels H. Rosberg was published in the October issue. More complete facts about his life and his important work in the industry have been furnished by his associates.

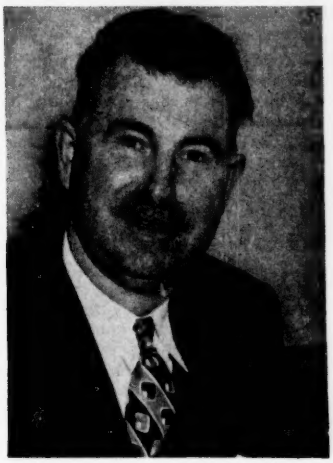
Mr. Rosberg was born in Stockholm, Sweden, March 9, 1890, but became a citizen of the United States in 1917, settling on the Pacific Coast where he varied his time designing and supervising the construction of several of the largest cold storage plants on this Coast. In May of 1931 he became associated with the California Consumers Corp. in South Pasadena, Calif. as superintendent of their plants. He left them to go into business for himself in March of 1943 but because of the war was shortly forced to sell his interest.

He then moved to San Francisco and for two years was supervising engineer of Merchants Ice and Cold Storage Co., in which capacity he designed and supervised construction of their new plants. Following completion of the Bercut-Richards Packing Co., million cubic foot cold storage plant in Sacramento, Calif. which he designed and constructed during this period, he again formed his own company, Nels H. Rosberg, Inc. of San Francisco, Calif. — Refrigeration Engineers, Consultants, and Contrac-

tors — of which he was active president until the time of his death.

Mr. Rosberg was a charter member and the first president of the San Francisco Section of A.S.R.E. as well as a charter member of the San Francisco Chapter of N.A.P.R.E. During his residence in Los Angeles, he also served as president of the Los Angeles sections of both the A.S.R.E. and N.A.P.R.E. He was also a member of the Institute of Food Technologists and during his lifetime had published numerous articles relative to food freezing and refrigeration in cold storage plants, printed in the publications of these various societies. He was further a Mason and member of the Presidio Lodge in San Francisco.

He is survived by his widow, Esther A. Rosberg, and one daughter, Phyllis Rosberg.



M. E. Bell

The Los Angeles Convention gives Mort Bell an opportunity to visit with old friends in California. Now a resident of Seattle he has for some months been Supervising Engineer for Sicks' Brewery Enterprises. The department Mr. Bell heads serves all the affiliated American and Canadian companies. It has supervision of all engineering work for any brewery developments, changes in plants, extensive repairs and plant expansions.

At the convention Mr. Bell will preside as chief of the Bureau of Refrigeration Information. A member of the association for more than 25 years he has served as president of both Los Angeles and San Francisco chapters. The convention in a way is a homecoming for him. He will probably use the opportunity to tell the Californians about the glories of the Northwest.

Winners of the 1950 Membership Contest Los Angeles and Stockton-Modesto Win

IT IS getting to be a habit with Los Angeles. They repeated their feats of the last three years by winning the 1950 Membership Contest with the largest number of new members and total points. During the contest they added 71 new members to their chapter. New Orleans took second and Memphis third.

N.A.P.R.E. Membership Trophy

Stockton-Modesto won the contest based on percentage increase. This is the section where the smaller chapters compete on more even terms with the larger groups. Los Angeles had second place in this division and Dallas was third.

The two winners will have first possession of the new trophies which are being awarded for the first time this year. Permanent possession of each trophy will go to the chapter winning it for 3 years. In Los Angeles they express the wish that the count might be retroactive for these trophies. It would depend on how far back they wanted to go. New Orleans was the winner for 3 straight years before the present process of repetition was set up.

The trophies are very attractive. The members who see them at the convention are expected to carry their enthusiasm home with them and push their associates to work harder in the next contest. While the larger chapters have run in cycles there has been a fast turnover in the smaller groups. Stockton-Modesto had its last win in 1940. Presumably they will work for their next win in 1951 since they have their brand on the trophy.

Pyramid Prizes

High man for pyramid prizes was Donald Byl of Los Angeles Chapter. He ran up a total of 19 new members during the contest. Of course he had to push right along because there was V. A. Stubblefield close up with 16 new members at the finish. Together these two Los Angeles men secured more members than any other whole chapter took in.

Good results were obtained this year by Leo Vivien, New Orleans and Charles Conley, Memphis. These two led their chapters in total new members secured and it will be noted that their groups finished in second and third places.

Watch For the

Special NARW Pre-Convention Issue

Ice and Refrigeration January, 1951

—Courtesy Wheelco Instruments Co.

"What wise guy's been monkeying with this temperature recorder?"

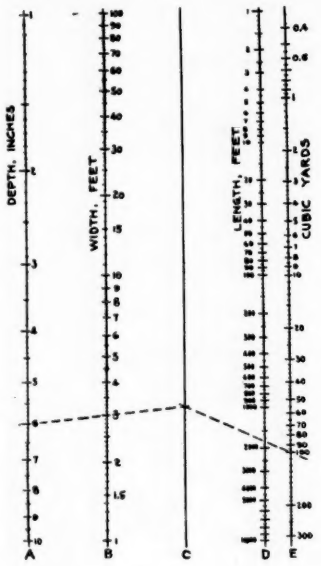
Convention Report in January Issue

AT THE time this December issue is on the press the forty-first annual convention of NAPRE is meeting in Los Angeles. A report of the convention will be published in the January issue.

ENGINE ROOM POINTERS –

Measuring Excavations

WE OFTEN want to know the number of cubic yards in long, narrow, shallow excavations. The depth is then usually given in inches and the width and length in feet. The chart below has been developed purposely to take care of excavations of that kind. The depth, column A, is given in inches, while the width, column B, and length, column D, are given in feet. Simply run two zig-zag lines across the chart as indicated by the dotted lines and the number of cubic yards is instantly given in column E.



For example, the dotted lines drawn across the chart show that if we have an excavation 6 in. deep (column A) by 3 ft. wide, (column B) and 1800 ft. long, (column D), the number of cubic yards will be found to be exactly 100, in column E. Merely run a straight line through the 6, column A, and the 3 column B and locate the intersection in column C. Then from that point of intersection run through the 1800, (column D) with another straight line and the intersection with column E gives the answer as 100 cubic yards.

But that isn't all. The chart will also take care of deep excavations. Thus if the depth is 60 inches instead of 6 the same dotted line will give the answer as 1,000 cubic yards instead of 100. That is, if a digit is added in column A a digit must also be added in column E. Likewise if a digit is added in column B a digit must be added in column E.

The same dotted line would show that for an excavation 60 inches deep by 3 feet wide and 1800 feet long the number of cubic yards would be 1,000. Or, if the depth is 6 inches, width 300 feet, and the length 1800 feet, you will have to add two digits in column E because two digits were added to column B thereby giving 10,000 cubic yards in column E as the correct answer.

It is therefore evident that this chart will easily take care of almost any rectangular excavation and it will give results that are surprisingly accurate.—S.W.F.

Torque Wrenches

EVERY once in a while some mechanic asks this writer whether there is a wrench on the market that automatically tells the user when the bolt being tightened is sufficiently tight.

Yes, there is such a wrench, known as the "torque wrench", and the writer finds that in general, it is a "good thing". Years ago when the writer was a husky installer of machinery he recalls that he often broke bolts by pulling them up with too much vigor. He would probably do a poor job of gasketing, and in order to cover up that error and prevent leakage he would overstress the bolts. If necessary, he would slip a pipe over the wrench handle to give sufficient leverage to do the trick, which act, of course is wrong.

Making a wrench longer by "slipping a pipe over" is a simple procedure and it may look and sound good to some, but it is wrong to make a wrench longer in order to put nuts on tighter.

As every reader doubtless has observed, wrenches for small nuts are invariably short; for medium nuts, wrenches are medium in length; and for large nuts, they are long. The manufacturers therefore appear to have some "system" in making wrench lengths, and they have. The pitch of the thread is considered, the cross-sectional area of the bolt at the bottom of the threads is considered, and the average strength of the man who does the tightening is also considered.

To make a wrench "twice as long" you therefore increase the tension on the bolts to twice the amount, the force or pull on the wrench being the same. By increasing wrench lengths, the writer has frequently actually "stretched" bolts. Of course he usually stopped turning as soon as he felt the bolt begin to stretch, but that is exceedingly poor practice. Don't do it. The "point of stretch" of a bolt, sometimes called the "elastic limit", should never be reached. A stretched bolt is dangerous.

A good torque wrench eliminates the possibility of excessive bolt stresses and strains. Using such a wrench is a step in the right direction—in the direction of greater safety.

Use of Water by Boiler Feed Water Regulator

HOW much fuel should a good boiler feed water regulator save?" We have seen reports by prominent users in which it was shown that the savings range all the way from 2 to 8 percent of the fuel costs. The average is 4 percent, and that is the figure the writer would advise anyone to use.

A high quality boiler feed regulator does not cost much, compared with the savings it effects in a year's time. The ideal boiler feed regulator stabilizes the boiler water level within the safe limits which have been carefully set in advance. It temporarily increases the feed rate at every sudden drop in the load and stores up surplus furnace heat in the form of heated water. Then when the peak load comes on, it momentarily cuts down the feed water input and uses the "stored heat" over the peak without permitting a heavy influx of cold water.

In addition, there are other important savings such as: less wear and tear on heaters, economizers, feed water pumps and pipe lines, and much of the boiler operator's time is released for other important work. A high grade boiler feed regulator is entirely automatic and dependable in operation.—S.F.W.

Refrigerated Warehousing Industry

NATIONAL ASSOCIATION of REFRIGERATED WAREHOUSES

Division of American Warehousemen's Association

Executive Offices
TOWER BUILDING, WASHINGTON 5, D.C.

Executive Vice-president
WM. DALTON, WASHINGTON, D.C.

Secretary
JOS. H. COLQUITT, WASHINGTON, D.C.

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Vice-president
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Treasurer
WM. A. MOORE, NEW ORLEANS, LA.

THIS MONTH IN BRIEF

Refrigerated storage capacity in United States as surveyed by Production and Marketing Administration, United States Department of Agriculture shows four percent increase in gross Storage space since 1947. Nation has refrigerated storage capacity of 701 million cubic feet, an increase of 26 million cubic feet within last two years. A biennial survey.

Executive committee National Association Refrigerated Warehouses holds fall meeting at association offices, in Washington, D. C. Plans details of annual convention.

Frozen fruits and vegetables in storage September 30 shows increase over last year.

Warehousing companies form cooperative group to cover eastern and middle west sections.

Pennsylvania railroad opens new air-cooled display and delivery room at its produce terminal in New York City.

Cold Storage Holdings for October 31 show increase of nine percent over last month.

Survey of Refrigerated Storage Capacity

Survey of refrigerated storage capacity as of October 1, 1949 shows increase of 16 million cubic feet since 1947.

A SURVEY of the capacity of refrigerated storage warehouses in the United States as of October 1, 1949 has been issued by the Production and Marketing Administration of the United States Department of Agriculture. Questionnaires were mailed to all public, private and semiprivate refrigerated storage facilities, to fruit houses having artificially cooled storage facilities and to meat packing plants with refrigerated space used for storage purposes.

Refrigerated storages included in the survey are facilities artificially cooled to 50 F. or lower wherein food stuffs are generally stored for 30 days or more.

Refrigerated facilities operated by wholesalers, jobbers, or retailers who do not store for a period of 30 days or longer are not included. Space in lockers of 25 cubic feet or less, plants owned by the Armed Services, the Natural Cooler Storage of the United States Department of Agriculture in Atchison, Kans., and space in plants operated as part of a retail food business, hotel, or other establishment where persons are housed or fed also are not reported.

Four Percent Increase

From reports covering warehousing activities in every State, the survey indicated the Nation has a refrigerated storage capacity of approximately 701 million cubic feet (Table I). Within the 2-year period since the last biennial survey, refrigerated storage capacity increased 26 million cubic feet, most of which occurred in the Pacific region. Other areas showed slight gains; however, in the West North Central and East South Central sections only, storage capacity fell off but not sharply from the 1947 level.

Refrigerated warehouses in operation on October 1, 1949, totaled 1,849 and were concentrated largely east of the Mississippi, only 668 refrigerated storages being west of the Mississippi. However, the gross refrigerated storage capacity of this third of the Nation's storage warehouses accounted for about two-fifths of the total gross capacity in the United States.

The classification of gross storage capacity according to temperature range is shown in Fig. 1 and Table II. Although more than half of the gross storage space in the country can be held only between 30 and 50 F., the lower temperature ranges have made signal gains since 1947. For some time now there has been a trend to convert portions of existing facilities to sharp freezer space and for newly constructed facilities to have significant capacities in this temperature range. A comparison of sharp freezer capacity in 1947 and 1949 shows that during this 2-year period there was a 23-million-cubic-feet increase.

Freezer storage (0 F. to 29 F.) capacity remained unchanged, while cooler space increased only 3 million cubic feet since 1947. The fact that more than 88 percent of the national increase in gross refrigerated storage space was attributable to the growth in sharp freezer capacity indicates only in a small way the emphasis placed on zero degree storage space. The best measures of this growth are the relative proportions of gross storage capacity capable of maintaining at least zero degree in the last 10 years. Today, exclusive of space in meat-packing plants,[1] 1 out of every 4 cubic feet of gross storage space

[1] Gross refrigerated storage capacity in meat-packing plants is excluded in the comparison because prior to 1943 all space in meat-packing plants was included in the national total, whereas since that date only space used for storage purposes is reportable.

TABLE I—TOTAL REFRIGERATED STORAGE CAPACITY, BY TYPE OF WAREHOUSING OPERATION OCTOBER 1, 1949

Type of Refrigerated Storage[1]	Plants	Gross Space				Net Piling Space			
		Freezer		Cooler	Total	Freezer		Cooler	Total
		Zero F and below	Above 0 Through 29F	Above 29 Through 50F		Zero F and below	Above 0 Through 29F	Above 29 Through 50F	
	Number	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.
Public general	605	133,691	56,183	173,460	363,334	94,079	41,046	127,717	262,842
Private & semi-private general	411	20,934	20,206	38,506	79,646	15,695	14,785	28,397	58,877
Meat-packing plant	227	12,257	18,905	85,162	116,324	8,203	12,128	56,561	76,892
Apple Houses	606	1,068	1,476	138,930	141,474	872	1,270	112,604	114,746
Public	146	605	1,056	48,261	49,922	503	942	40,184	41,629
Private & semi-private	460	463	420	90,669	91,552	369	328	78,420	73,117
Total	1,849	167,950	96,770	436,058	700,778	118,849	69,229	325,279	513,357

can be held at zero degree or below; in 1939 only 1 out of 6 cubic feet could be held at this temperature.

Net Piling Space

Net piling space may be correctly thought of as a more reliable measure of storage capacity than gross space, for the very reason that it is the actual area used for foodstuffs storage. Because it is not as rigidly defined as gross space, which represents the physical measurements of a room or rooms, net piling space storage capacity is affected by various warehousing practices. Variations within the industry in aisle widths, aid space around piles, and location of refrigeration units are just a few of the factors affecting net piling storage capacity. These variances, however, do not affect the utility of net piling space as a measure of capacity for, in the final analysis, it reduces all types of warehousing operations to a common denominator. Net piling space is the best measure for evaluating space requirements and for converting cubic capacity to pound capacity.

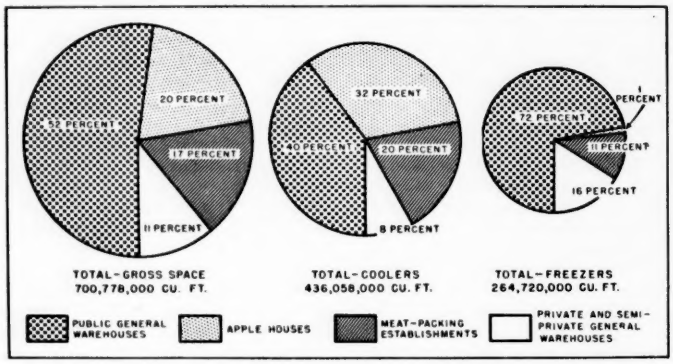


Fig. 1—Distribution of total gross refrigerated storage space by type of warehouse, October 1, 1949.

Total net capacity for all types of refrigerated facilities amounted to 513 million cubic feet—an increase of 16 million cubic feet since 1947 (Table II). Storage space in all temperature ranges did not share in this increase; it was, instead, almost wholly accounted for by gains reported in the sharp freezer capacity. This type of storage space, at 119 million cubic feet, reflected a 15-million-cubic-feet increase over the 1947 level. With the exception of the Middle Atlantic and West North Central geographic divisions, all regions reported greater storage capacity in the sharp freezer range. The largest gain since 1947 occurred in the West South Central area followed by the Pacific coast and East North Central regions.

Public General Warehouse Space

Refrigerated storage capacity in warehouses engaged in storing food commodities for others for pay show-

TABLE II—TOTAL REFRIGERATED STORAGE CAPACITY, BY REGIONS, OCTOBER 1, 1949

Region	Plants	Gross Space				Net Piling Space			
		Freezer		Cooler	Total	Freezer		Cooler	Total
		Zero F and below	Above 0 through 29°F	Above 29 through 50°F		Zero F and below	Above 0 through 29°F	Above 29 through 50°F	
	Number	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.
New England	181	9,479	6,942	14,385	30,806	5,746	5,253	11,223	22,222
Middle Atlantic	434	35,962	19,398	94,033	149,393	25,388	14,286	70,851	110,525
East North Central	350	36,490	20,012	87,057	143,559	25,403	13,359	62,322	101,084
West North Central	152	31,874	13,739	54,659	100,272	22,648	8,944	36,140	67,732
South Atlantic	173	8,079	7,203	40,991	56,273	5,778	5,407	32,949	44,134
East South Central	43	3,843	2,334	8,107	14,284	2,831	1,693	6,200	10,724
West South Central	82	13,589	3,962	14,005	31,556	10,491	2,794	9,993	23,278
Mountain	55	4,467	1,824	6,098	12,389	3,120	1,355	4,229	8,704
Pacific	379	24,167	21,356	116,723	162,246	17,444	16,138	91,372	124,954
United States	1,849	167,950	96,770	436,058	700,778	118,849	69,229	325,279	513,357

TABLE III—TOTAL GROSS REFRIGERATED STORAGE CAPACITY IN THE UNITED STATES, BY TYPE, OCTOBER 1, 1929—OCTOBER 1, 1949

Type of Refrigerated Storage	1929	1931	1933	1935	1937	1939	1941	1943	1945	1947	1949
	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.	1,000 Cu. ft.
Public[1]	316,810	325,703	317,211	322,450	333,833	351,368	371,771	389,991	403,832	408,232	413,256
Private[1]	29,133	35,222	32,739	31,051	33,890	32,072	43,973	49,544	62,291	83,781	85,417
Semi-private[1]	60,322	58,853	64,718	53,863	52,957	50,438	48,407	42,081	45,254	52,035	85,718
Meat-packing plant[2]	322,330	321,065	297,274	303,206	309,642	312,562	302,232	169,650	134,814	130,993	116,324
Total	728,595	740,843	711,942	710,570	730,322	746,440	766,383	651,266	646,191	675,041	700,778

[1] Includes apple house refrigerated storage space.
[2] The apparent decrease in over-all storage space since 1941 is due to meat-packing plants not reporting refrigerated working space as they did in previous years

ed only a slight increase since 1947. The net piling storage area on October 1, 1949, totaled approximately 263 million cubic feet as compared with 262 million cubic feet in 1947.

At first glance, it would appear that the capacity of public general warehouses remained relatively unchanged during the 2-year period since the 1947 survey, but on closer inspection of capacity, by temperature range, it was found that this was not the case. According to the reports received from 605 plants (there were 583 in 1947), net storage space capable of maintaining sharp freezer temperatures increased 11 million cubic feet (13 percent) to 94 million cubic feet (Fig. 2 and Table III).

Cooler Space Converted

Part of the increase was at the expense of cooler space, which underwent conversion during this period. Storage capacity for this temperature range actually decreased 9 million cubic feet since 1947. New construction and changes in type of warehousing operation also accounted for the increased net piling space classified as sharp freezers. Freezer storage capacity in the 0 F. to 29 F. range was equal to 41 million cubic feet, or about the same as in 1947.

Public general warehouses were in operation in every State except Wyoming. New York, with 83 public general warehouses, led all other States in this type of warehousing activity.

Storage capacity used for public storage, exclusive of public apple houses, made up almost four-fifths of all the sharp freezer space, three-fifths of the total freezer space, and almost two-fifths of all the cooler space in the country. On the average, one out of every two cubic feet of refrigerated net piling space was classified as public general space. If to this is added the space in public apple houses, the ratio of public storage space to nonpublic increases to almost three out of five.

Private and Semiprivate General Warehouses

An analysis of comparative changes in refrigerated storage capacity in the United States would not be complete without considering the role of private and semiprivate general refrigerated storage warehouses. Notwithstanding their small number, the

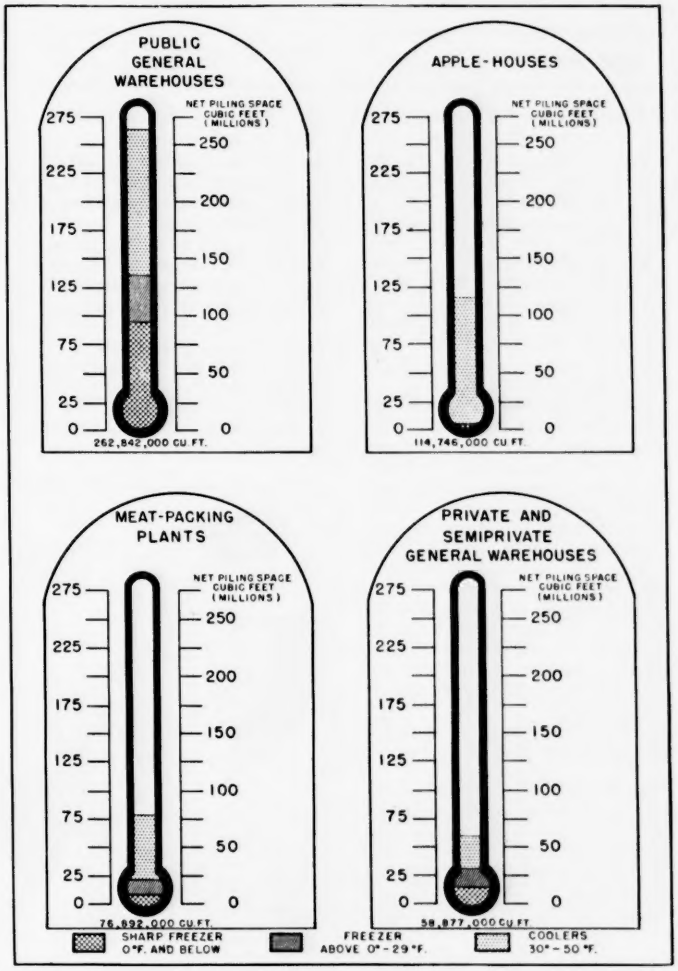


Fig. 2—Distribution of cooler and freezer net piling space by type of refrigerated storage, October 1, 1949.

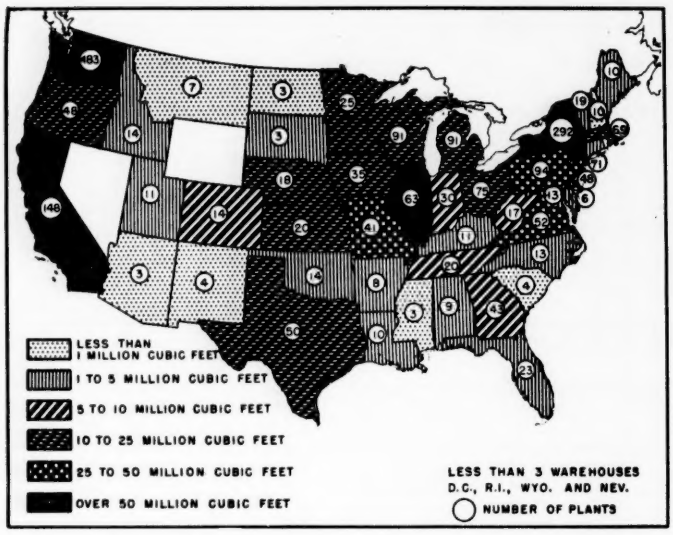

LESS THAN 1 MILLION CUBIC FEET
1 TO 5 MILLION CUBIC FEET
5 TO 10 MILLION CUBIC FEET
10 TO 25 MILLION CUBIC FEET
25 TO 50 MILLION CUBIC FEET
OVER 50 MILLION CUBIC FEET
LESS THAN 3 WAREHOUSES D.C., R.I., WYO. AND NEV.
NUMBER OF PLANTS

Fig. 3—Gross refrigerated storage space by states, October 1, 1949.

growth in storage capacity for this type of warehousing has, percentagewise, exceeded all others.

The number of plants in operation on October 1, 1949, totaled 411, with a net refrigerated storage capacity of 59 million cubic feet. These plants were concentrated largely in the East, North Central region, principally Wisconsin. The majority of these nonpublic warehouses are largely cheese storages (table 4).

The net increases in private and semiprivate refrigerated net storage capacity since 1947 are as follows: number of plants increased by 9 percent; sharp freezer space, 35 percent; freezer space, 50 percent; cooler space, 50 percent. Average over-all increase in capacity amounted to 45 percent. The relative importance of this segment of the refrigerated warehousing industry is further illustrated by the fact that in two years the percentage of the national storage capacity classified as private and semiprivate generally increased from 8 to 15 percent.

Meat-Packing Plants

Refrigerated storage space in meatpacking plants showed a net reduction of 10 million cubic feet since 1947, leaving only about 77 million cubic feet in operation on October 1, 1949. There are many more meat packers than 227, which is the number reporting for this survey, but, many packers do not operate storage facilities that come within the reporting requirement for this survey. There is therefore no comparability between the number of packers in the United States and the number for which reports were received on storage capacity.

There is also no significance in the fact that net refrigerated storage capacity in meat-packing plants fell off sharply in two years. The reason for this is that in their 1947 report some packers erroneously listed working space, chill rooms, and cooler space used exclusively for hanging dressed carcasses prior to shipping. Capacity for these nonstorage areas was eliminated from their 1949 report.

Apple Houses

The distribution of refrigerated storage space specializing in the storage of apples may aptly be described as open parentheses, one half of which borders on our eastern coast and the other half on our western coast. The three geographical regions in the Atlantic side of the parentheses (New England, Middle Atlantic States, and South Atlantic States) and the three States which make up our western border contain within their boundaries more than 81 percent of the apple houses in the country, these having a combined net piling space area of 107 million cubic feet. Of the national total, 115 million cubic feet, more than half is on the Pacific coast, yet this region has only 162 out of a total of 606 plants.

Apple storage capacity increased approximately 7 million cubic feet since 1947 and in number increased by 40 plants. For this type of specialized warehousing, cooler space (30 to 50 F.) is of major importance (Fig. 2). Although cooler capacity in apple houses is second only to that in public general warehouses, since 1947 the percentage of the national cooler capacity devoted principally to apple storage increased from 32 to 35 percent. During the same period, public general warehouses reported that their net capacity in coolers was reduced by about 9 million cubic feet.

Regional Capacity

Combined net refrigerated storage capacity of the Pacific region continued to exceed all other geographic di-

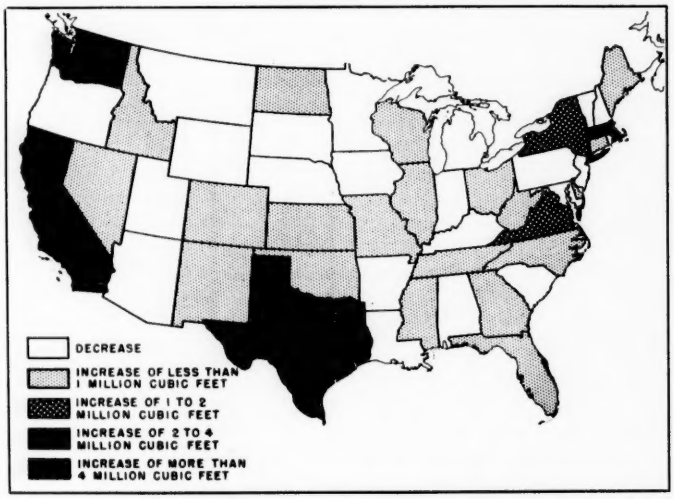

DECREASE
INCREASE OF LESS THAN 1 MILLION CUBIC FEET
INCREASE OF 1 TO 2 MILLION CUBIC FEET
INCREASE OF 2 TO 4 MILLION CUBIC FEET
INCREASE OF MORE THAN 4 MILLION CUBIC FEET

Fig. 4—Net increase or decrease in refrigerated storage space by states, October 1, 1947 to October 1, 1949.

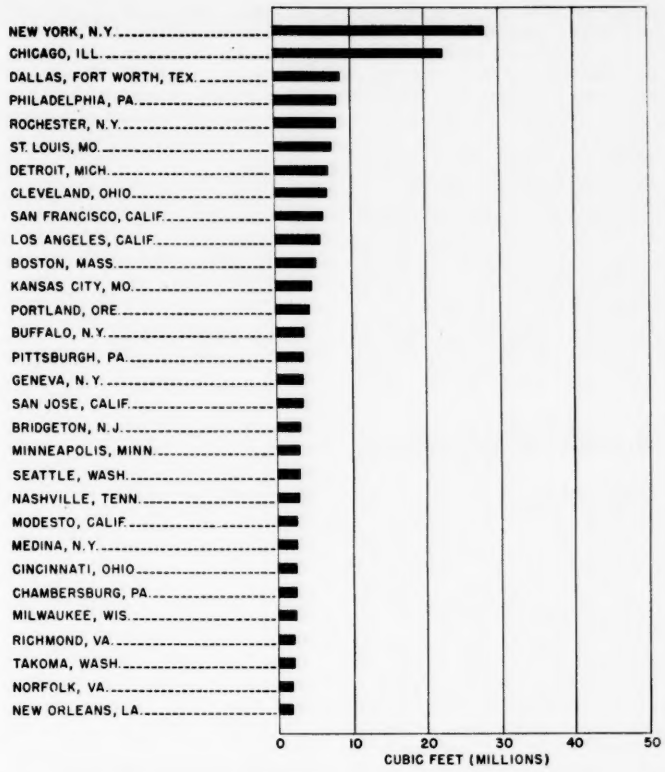


Fig. 5—Public general cold storage space in cities with three or more warehouses and approximately two million cubic feet or more of net space—includes the city and surrounding territory within a radius of 25 miles.

ranked second in the amount of space used principally for apple storages and third in the Nation for space classified as private, semiprivate, and meat-packing refrigerated storage space.

More than half of the 101 million cubic feet of the refrigerated storage capacity in the East North Central region was devoted to public general warehousing and as such ranked second in the Nation for this type of warehousing and third in total refrigerated storage capacity. The East North Central region led all others, however, in the amount of private and semiprivate refrigerated storage facilities and was second only to the West North Central region in storage capacity of meat-packing plants. On October 1, 1949, there were 113 plants doing business as private or semiprivate warehouses with a combined capacity of 21 million cubic feet. This exceeded by 5 million cubic feet the next leading area, the Pacific coast, and by 12 million cubic feet the Middle Atlantic area, which ranked third in private and semiprivate capacity.

In the West North Central part of the United States, total refrigerated storage capacity of 68 million cubic feet ranked fourth in the Nation. However, almost half of this storage capacity was in meat-packing plants and as such led all other areas in this type of warehousing. Public general warehousing facilities were next in order of capacity, with 28 million cubic feet.

Other areas in order of total refrigerated storage capacity are as follows: South Atlantic, West South

visions. To maintain its leading position first reached on the basis of the 1947 survey, net piling space in Washington, Oregon, and California totaled 125 million cubic feet, an increase of 11 million cubic feet since the last survey and 27 million cubic feet since October 1, 1945 (Table II).

Approximately half of the storage capacity on the West coast, however, was utilized for apple storage purposes—62 million cubic feet—and in this type of warehousing operation, the region ranked first in the Nation.

The three states comprising the Middle Atlantic area — New York, New Jersey, and Pennsylvania — ranked second in order of total storage capacity but first in space devoted to public general warehousing. With more plants than any other region, 434, and with more public general refrigerated storage space, 76 million cubic feet, the Middle Atlantic region in total has a storage capacity of 111 million cubic feet according to the 1949 survey. In addition, this area

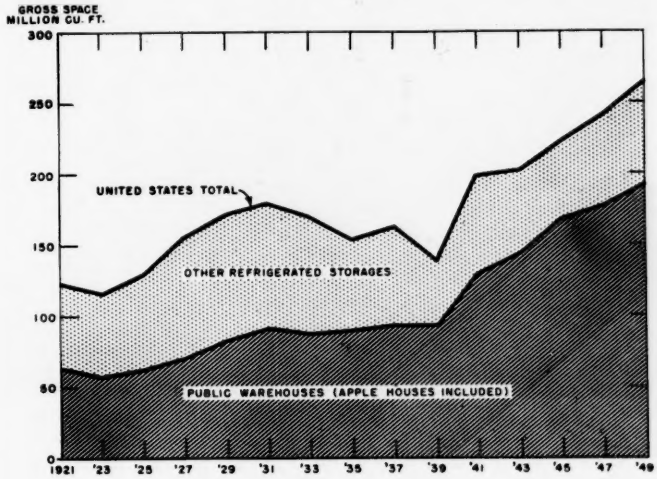


Fig. 6—Growth of freezer storage space United States 1921-1949 as of October 1 for the years indicated except 1941 which is as of June 16.

Central, New England, East South Central, and Mountain.

Regional differences with respect to capacity by temperature range indicate a concentration of sharp freezer space in the Middle Atlantic, East and West North Central regions. These three areas, with 73 million cubic feet collectively, account for three-fifths of the Nation's total capacity in this temperature range. Moreover, their respective capacities in the freezer range for the three aforementioned regions account for more than half of all the space in the Nation capable of maintaining 0 to 29 F.

Cooler space was predominant on the West coast, with about 91 million cubic feet, which was almost three-fourths of the total space in the area. The Middle Atlantic region ranked second, with 71 million cubic feet, followed by the East North Central region where cooler capacity totaled 62 million cubic feet. In these two respective regions, more than three-fifths of the total net storage capacity for the area was classified as cooler space.

The growth of sharp freezer space is indicative of the upward trend in frozen food production and storage holdings. Even during such a relatively short period as from 1945 to 1949, sharp freezer capacity increased from 97 to 119 million cubic feet; the net increase in total storage capacity during this period was 36 million cubic feet. It is significant that more than the major increase in sharp freezer space occurred in the regions west of the Mississippi. The increase reflected new constructions and conversions to this type of space, as more than 15 million cubic feet of sharp freezer space was added since 1945. Public general warehouses in the West South Central area increased their sharp freezer capacity by 6 million cubic feet and on the West coast 3 million cubic feet was added during the last 4 years.

Executive Committee Holds Fall Meeting

THE Executive Committee of the National Association of Refrigerated Warehouses met for its regular fall meeting at association headquarters October 16 for three full days session. This was the first time in many years the Committee met in Washington.

Important decisions reached included (1) approval of Emergency Plans Committee recommendations, (2) approval of changes in the USDA Monthly Cold Storage Report as recommended by the American Meat Institute, (3) that the NARW should take a firm stand on all legislation affecting it directly or indirectly. Other subjects discussed were membership, directory advertising, chapter liaison, finances, legislation, convention. A special feature of the meeting were presentations by staff members describing association activities, membership services and constructive results obtained.

On the lighter side, committee members were treated to a sight-seeing tour of the Nation's Capitol, a tour of the FBI, cocktail party and dinner with government and allied industry officials at the Statler Hotel and a special shore dinner at one of Washingtons' famous seafood restaurants.

Miss Washington, D. C., otherwise known as Mary Jane Hayes, greets members of the Executive Committee and staff members of the National Association of Refrigerated Warehouses on the steps of the Nation's Capitol. In Washington for a three-day business session, the Committee pauses long enough to take in some of the sights, including the attractive Miss Hayes. NARW president J. L. Gagini is on her right; vice-president J. P. Johnson on her left.

Statistics on Public Refrigerated Warehousing

INFORMATION on the public refrigerated warehousing industry has been furnished recently by the National Association of Refrigerated Warehouses to various government officials and agencies. In addition to supplying occupancy figures, they have been informed, told and written such things as:

Total weight of commodities held in public refrigerated warehouses as of September 1, 1950: 3.2 billion pounds.

Total gross refrigerated space represented by the industry: 413,600,000 cubic feet. Cooler space: 188,000,000 cubic feet. Freezer space: 225,600,000 cubic feet.

Membership in the National Association of Refrigeration Warehouses represents 85 percent of this total space.

Total investment in the industry as represented by present replacement costs $628,672,000.

During 1949 the industry employed 20,250 persons, paid over $65 million in wages and over $25 million in taxes.

Pear Storage Space Needed

MEMBERS of the Oregon-Washington-California Pear Bureau are in need of cooler storage space throughout the United States in which to store pears in advance of the selling season. These storers will also require ripening facilities at each plant where pears are stored. These facilities need consist only of a small room capable of holding 200-300 boxes at a time where pears can be ripened at 60 to 70 F. Warehousemen may expect one to four cars of pears for storage. Those who are interested in this business and can provide the necessary ripening facilities are advised to contact R. A. Patterson, manager, Oregon-Washington - California Pear Bureau, 502 Woodlark Building, Portland 5, Oregon.

Frozen Fruits and Vegetables in Storage

OF THE 17 million pounds of frozen peaches in storage September 30, 13 million pounds were classified by warehousemen as to container size. This coverage, representing 78 percent of total peach holdings, was the greatest since container data was collected.

Reports on package sizes indicate that institutional size containers moved into storage in much greater amounts than stocks packaged for retail use. Twenty-seven percent of classified peach stocks were in the smaller size containers on September 30, a drop of 10 percentage points since August 31. Not since the summer of 1948 has the ratio of retail to institutional packages been this low. On the other hand stocks of frozen raspberries in retail packages, percentagewise, were the highest on record at the end of September, although coverage on September 30 was 6 percentage points below that of the preceding month.

COLD STORAGE STOCKS OF FROZEN FRUITS AND VEGETABLES IN PACKAGES OF ONE POUND OR LESS IN STORAGE SEPTEMBER 30 AND AUGUST 31, 1950.

	Sept. 30, '50 lbs.	pct.	Aug. 31, '50 lbs.	pct.
Peaches	3,632	27	2,902	37
Raspberries	6,930	27	6,969	24
Strawberries	35,713	42	36,823	38
Asparagus	5,977	75	5,507	69
Beans, lima	24,188	60	10,459	46
Beans, snap	25,804	69	24,003	69
Corn, sweet	14,898	50	6,864	45
Peas, green	58,201	61	55,221	56
Spinach	10,886	84	12,019	79

Frozen strawberries showed little change in the proportion of holdings in consumer packages with 37 percent of classified stocks reported to be in packages of this type in comparison to 38 percent reported a month ago.

Of the 364 million pounds of selected frozen vegetables in storage September 30, 62 percent were classified according to container size, a decrease of 3 percentage points from last months coverage.

The ratio of retail to institutional size containers remained the same as last month for snap beans with 69 percent of classified stocks reported to be in the smaller containers.

All other items showed an increase, percentagewise, in consumer packages ranging from 5 to 14 points. The proportion of spinach in retail containers rose to a new high with 84 percent of classified stocks reported to be in this size container, an increase of 5 points over August 31 stocks and 1 point above the record established November 30, 1949.

Sixty percent of the lima beans reported according to container size were in consumer packages, a 14 point increase over stocks of a month ago.

Classified stocks of corn in retail and institutional packages were almost evenly divided as the smaller packages increased from 45 to 50 percent during September.

Asparagus in packages for retail use amounted to 75 percent and peas to 61 percent of the stocks classified in comparison with 69 and 56 percent respectively for these products reported on August 31.

Research Foundation Annual Meeting

AN announcement by Dutch Diehl, director of the Refrigeration Research Foundation, suggests that refrigerated warehousemen, when making reservations for the annual AWA-NARW meeting February 5 to 8, plan to arrive a few days earlier to take in the Foundation meeting. It will start Friday morning, February 2, at the Statler Hotel, Boston, Mass. The following tentative program is announced:

FRIDAY: 10:00 a.m. and 2:00 p.m.—Scientific Advisory Council open to any warehouseman who wishes to attend.

SATURDAY: 10:00 a.m.—Foundation membership meeting. 2:00 p.m.—Reports of research and service activities, discussion of program and policies, election of board members. 6:00 p.m.—Board of Governors social hour and annual dinner meeting.

SUNDAY: 9:00 a.m. — Breakfast meeting of new executive committee. 2:00 p.m.—Joint TRRF-NARW membership meeting. Cold Storage of Candies, J. G. Woodroof; Handling and Cold Storage of Frozen Shrimp, E. A. Fieger; Cold Storage of Coffee, C. E. Baker.

Canadian Holdings of Fruits and Vegetables

THE Dominion Bureau of Statistics, Ottawa, Canada, reports that total stocks of frozen fruit October 1, 1950 amounted to 18,636,000 lbs. as compared with 18,397,000 lbs. October 1, 1949 and 19,972 lbs. September 1, 1950. Frozen vegetables amounted to 12,632,000 lbs. October 1, 1950 as compared with 7,961,000 lbs. October 1, 1949 and 10,294,000 lbs. September 1, 1950.

Refrigerated Warehousing

Warehousing Companies Form Cooperative Group

THREE warehousing companies have formulated arrangements to represent each other in their respective localities. Plans were completed at a meeting held in Chicago by A. B. Efroymson, president of the National Terminals Corp., Cleveland; J. Leo Cooke, president of the J. Leo Cooke Warehouse Corp., Jersey City, N. J., and W. W. Huggett, president of the North Pier Terminal Co., Chicago.

J. Leo Cooke Warehouse Corporation will be the Eastern representative for National Terminals Corporation of Cleveland, the Indiana Terminal and Refrigerating Company of Indianapolis and the North Pier Terminal Company of Chicago. It will be their function to cover the metropolitan area of New York, New England territory, Philadelphia and Washington, D. C.

In Cleveland the National Terminals Corporation will take care of the Lake Erie area as well as Ohio, including Akron, Youngstown and Cincinnati area.

The Indiana Terminal and Refrigerating Company will take care of the territory around Southern Indiana and Illinois.

North Pier Terminal Company will be responsible for representation of all four organizations in the metropolitan area of Chicago as well as the area in the Middle West that is not covered by the other two organizations.

The personnel of all four organizations is well known in the warehousing transportation and distribution circles and the arrangement should prove to be a very beneficial alliance.

This arrangement is part of the expansion program of the J. Leo Cooke Warehouse organization which was talked about at the beginning of this year when this concern acquired four buildings in Jersey City for the purpose of general warehousing and distribution business.

Southwestern Chapter Meets

THE Southwestern Chapter of N. A.R.W. met October 15. Local affairs were thoroughly discussed and the chapter went on record as fully supporting efforts of the national office in defense matters. New officers elected were: chairman, C. P. Metcalf, Austin, Tex.; vice-chairman C. M. Smith, San Antonio; treasurer, S. C. Wentworth, San Antonio.

Railroad Opens New Cold Storage Room at Produce Terminal for Perishables

SUCCESSFUL operation of a new air-cooled display and delivery room at its Produce Terminal, Pier 27, North River, New York, is reported by P. C. Reed, Perishables Traffic Manager of the Pennsylvania Railroad. The facility, placed in operation during this year, provides improved service to shippers of fruit and other commodities.

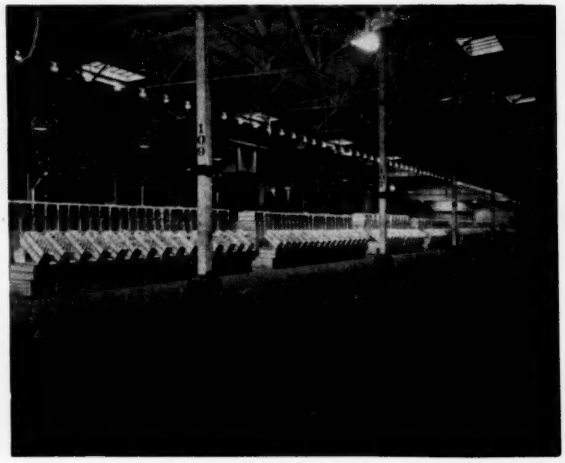
Designed to house certain so-called "soft" fruits, such as peaches, apricots, plums, prunes, cherries, persimmons and pears during periods of unusually hot weather between May 15 and October 15, the new chill room will have a capacity ranging between 35 and 40 carloads and will be able to hold temperatures down to 45 or 50°F when the outside air reaches 80 degrees.

At the present time, the system is able to maintain a forty-five degree temperature for about forty carloads of produce. Peaches, apricots, plums, prunes, cherries, persimmons and peas are expected to benefit most from the system.

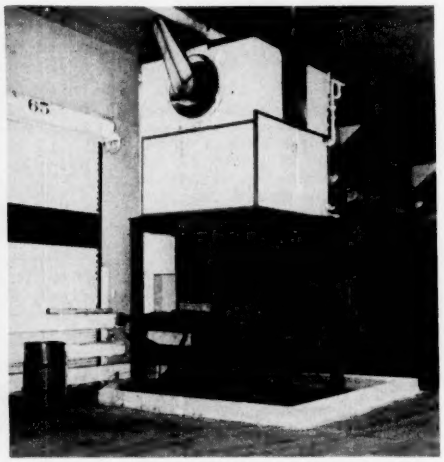
Through utilization of previously installed electric blowers needed for the circulation of heat from steam pipes in Winter, and the construction of new ice chambers, baffles, and drainage pans, as well as a series of movable canvas curtains, the railroad with the aid of its contractors, the Penn Stevedoring Corporation, was able to effect conversion of its storage space on Pier 27 in short time. If this service proves inadequate, additional cold storage space may be made quickly available on Pier 28 adjacent.

Neither shippers nor consignees

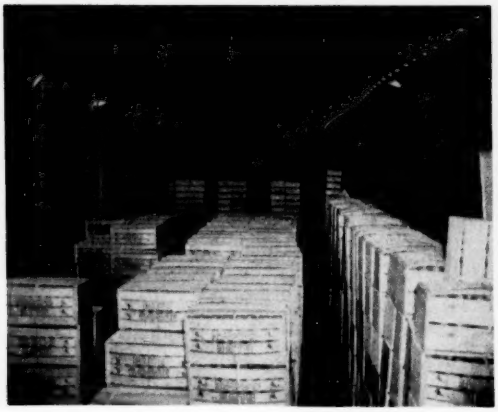
(Continued on page 62)



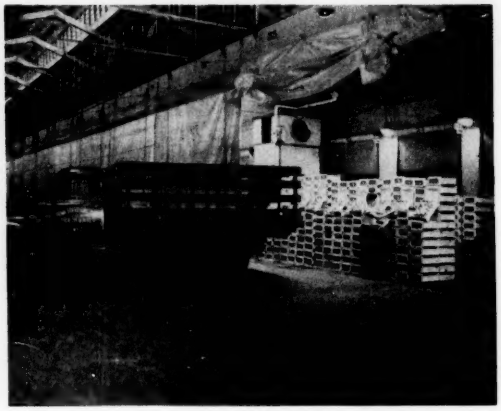
General view of new chill room at Pennsylvania Produce Terminal, North River, N. Y.



Closeup of electric blower used for circulating air in Pennsylvania chill room



Crates of fruit are stored in new chill room



This truck has entered cooled area to load

October 31 Cold Storage Holdings

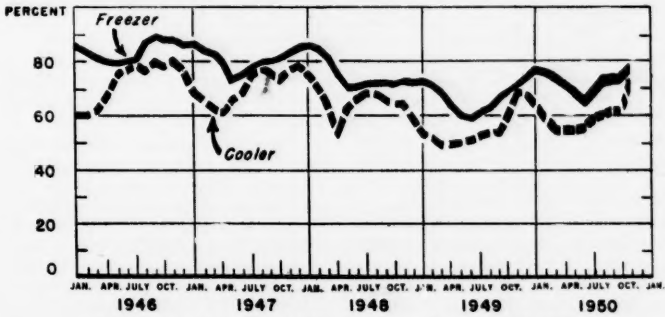
THE utilization of public cooler space increased 9 percentage points during October, bringing the October 31 occupancy level to 72 percent. This compares with an average cooler occupancy for this time of year of 71 percent, and marks the first time since January 31, 1948 that the occupancy level for any month was greater than its respective average level.

Increased utilization of cooler space was reported in all regions except the East South Central and West South Central areas where a decrease of only 1 percentage point was reported for each region. Occupancy of 85 percent or better was reported in each of the following states—Rhode Island, Connecticut, Indiana, Wisconsin, Michigan, Missouri, and Kansas. Public freezer space also increased during October and by October 31 reached 78 percent, an increase of 4 points.

The utilization of public freezer space on October 31 was only 1 point below average, but 8 points above the corresponding month a year ago. The New England region, with a 4 point decrease in freezer occupancy, and the East South Central region which reported the same occupancy level of a month ago were the only areas which did not show an occupancy increase. Cities reporting an occupancy of 85 percent or better for both cooler and freezer space were Buffalo, Detroit, Nashville, and San Jose.

The total weight of cooler and freezer-held commodities on October 31 exceeded average holdings by more than a half billion pounds. Cooler-held commodities amounted to 3 billion pounds and foodstuffs stored in freezer space totaled 1.9 billion pounds in comparison to respective average stocks of 2.7 and 1.6 billion pounds. The net into-storage movement of approximately 1 billion pounds of cooler commodities during October can mostly be accounted for by increased apple holdings. All other cooler items, with the exception of canned fruits and vegetables and beef, showed net withdrawals during the month. Freezer-held commodities were increased by 76 million pounds during October. Net withdrawals of cream, butter, frozen eggs, and pork were not quite enough to counteract in-movements of other foodstuffs stored in freezers.

Frozen fruits moving into storage during October were six times as great as the average seasonal increase. By the end of the month, a net into-storage movement of 24 million pounds—the average was 4—brought



Occupancy of public refrigerated warehouses 1946-1950.

Seasonal increases in storage stocks of apples raised total holdings to 34 million bushels by October 31. This compares with 35 million bushels in store last year and the all-time record high of 36 million bushels in store November 30, 1947. Holdings of pears were down to 2 million bushels which was a little below average for this time of year. However, net withdrawals during October of 2 million bushels were average.

Frozen fruits moving into storage during October were six times as great as the average seasonal increase. By the end of the month, a net into-storage movement of 24 million pounds—the average was 4—brought total holdings to 491 million pounds, only 9 million pounds below the all-time record high of 1946. In contrast, last year this time frozen fruits in storage decreased 13 million pounds.

A majority of the frozen fruit items reflected net seasonal withdrawals but countering these were net increases in storage stocks of frozen apples,

TABLE I—COLD STORAGE HOLDINGS IN PUBLIC, PRIVATE AND SEMI-PRIVATE WAREHOUSES, APPLE HOUSES AND MEAT PACKING PLANTS (000 LBS.)

	Oct. 31, 1950	Sept. 30, 1950	Oct. 31, 1949	Five-year Average
Meat and meat products, lbs.	405,233	410,280	370,408	369,576
Lard and rendered pork fat, lbs.	51,449	58,241	38,320	55,542
Frozen poultry, lbs.	217,801	140,352	211,517	228,789
Creamery butter, lbs.	207,795	234,111	144,819	104,918
American cheese, lbs.	277,597	292,421	185,839	159,996
Other cheese, lbs.	26,063	26,743	19,759	22,240
Shell eggs, cases	494	1,558	501	1,851
Frozen eggs, lbs.	104,079	133,002	96,382	161,236
Apples, bu.	34,052	7,321	35,224	28,585
Frozen fruits, lbs.	490,509	466,135	342,565	400,469
Frozen vegetables, lbs.	453,129	430,576	387,681	320,497
Frozen fish, lbs.	166,440	158,473	156,077	146,436

TABLE II—PERCENTAGE OF SPACE OCCUPIED BY PUBLIC COLD STORAGE WAREHOUSES (APPLE HOUSES EXCLUDED)

	Net Piling Space (000 cu. ft.)		Oct. 31, 1950 (%)		Sept. 30, 1950 (%)		Oct. 31, 1949 (%)		5-Year Average (%)	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	2,751	6,694	73	72	55	76	73	80	62	82
Middle Atlantic	36,133	30,202	73	87	54	81	69	74	69	83
East North Central	30,166	28,289	78	77	72	72	71	67	72	79
West North Central	9,749	14,675	85	76	77	75	73	68	75	76
South Atlantic	7,451	6,453	61	75	57	71	54	72	65	77
East South Central	3,294	2,880	82	86	83	86	77	82	76	78
West South Central	7,855	7,559	59	59	60	58	57	47	65	69
Mountain	1,485	1,529	71	81	56	80	70	70	68	79
Pacific	18,703	20,738	61	78	58	72	67	75	75	81
United States	117,586	119,019	72	78	63	74	68	70	71	79

TABLE III—PERCENTAGE OF SPACE OCCUPIED BY PRIVATE AND SEMI-PRIVATE REFRIGERATED WAREHOUSES AND MEAT PACKING PLANTS (APPLE HOUSES EXCLUDED)

	Private and Semi-Private Warehouses						Meat Packing Establishments					
	Net Piling Space (000 Cu. Ft.)		Space Occupied—Per Cent Oct. 31, 1950		Sept. 30, 1950		Net Piling Space (000 Cu. Ft.)		Space Occupied Oct. 31, 1950		Sept. 30, 1950	
	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer	Cooler	Freezer
New England	88	102	74	70	68	79						
Middle Atlantic	1,493	1,152	76	85	56	79	1,567	282	86	85	84	86
East North Central	3,885	1,530	83	60	77	56	4,483	1,153	85	79	68	83
West North Central	490	2,151	97	86	85	78	15,527	6,459	83	63	68	85
South Atlantic	119	1,287	50	18	48	67	893	219	85	99	100	85
East South Central							351	94	82	91	100	85
West South Central	234	73	43	12	42	16	2,525	500	100	100	100	100
Mountain							453	365	100	100	97	98
Pacific	2,752	3,443	54	80	29	86	2,835	589	92	90	89	93
United States	9,061	9,738	72	70	56	75	28,634	9,661	86	71	73	87

NOTE:—Blank spaces indicate that insufficient returns were received.

grapes, peaches, plums and prunes, fruit juices other than orange, and unclassified frozen fruits. Frozen grapes showed the largest net increase—25 million pounds; the greatest decrease, 5 million pounds, was reported in frozen cherry stocks.

Frozen vegetables, likewise, increased by greater than average amounts during October. During the month total holdings increased by 23 million pounds which was almost twice the average. The 453 million pounds in store were a record high not only for this time of year but for all times since 1937 when records were first kept. Almost half of the net increase during the month was accounted for by the seasonal increase of lima beans which was at 82 million pounds on October 31 compared with 72 million pounds a month earlier. Broccoli, brussels sprouts, cauliflower, pumpkin and squash, and spinach showed slight increases during the month. The remaining frozen vegetable items reflected seasonal net withdrawals. Green peas showed the greatest net reduction with 12 million pounds.

Twice the average net withdrawals of creamery butter during October brought total holdings down to 208 million pounds by the end of the month. This compares with 145 million pounds in store last year and average stocks of 105 million pounds in store on October 31 for the 5-year period ended 1949.

American Cheddar cheese stocks were down to 278 million pounds, reflecting a net out-of-storage movement of 15 million pounds during October. Current holdings, however, were still greater than any October 31 stocks on record being 92 million pounds above last year's supply and 118 million pounds greater than average. All cheeses in storage amounted to 311 million pounds as compared with 210 million pounds last year.

Shell egg stocks were down to 494 thousand cases and were at an all-time low for this time of year. Frozen egg stocks decreased in average amounts during October—29 million pounds—and by the end of the month totaled 104 million pounds.

Poultry stocks while increasing by greater than average amounts during October were below the net increase of last year. A net into-storage movement of 77 million pounds brought October 31 holdings to 218 million pounds. Last year's stocks at 212 million pounds reflected a seasonal net increase of 79 million pounds. Greatest increases in poultry holdings were reported for turkeys, fowls, and roasters. Each increased by 34, 22, and 6 million pounds respectively. On October 31, turkeys in storage amounted to 77 million pounds; fowls, 62 million pounds; and roasters, 14 million pounds. In the Middle Atlantic States, turkeys totaled 18 million pounds; storages in the East North Central States held 19 million pounds. On the West Coast, turkey stocks amounted to 16 million pounds and the West North Central area had almost 15 million pounds.

National holdings of meats and meat products in storage on October 31 amounted to 405 million pounds as compared with 370 million pounds last year and 410 million pounds on September 30. Current holdings not only exceeded last year's stocks by 35 million pounds but were also greater than average by a like amount. Commodity-wise, holdings of beef were up 14 million pounds over a month earlier to total 95 million pounds which was a little below average for this time of year.

Pork stocks decreased to 221 million pounds thereby reflecting a net withdrawal during October of 19 million pounds. Although this was greater than average net withdrawals, nevertheless total stocks were some 39 million pounds greater than average October 31 stocks.

Net seasonal increases in fishery products during October raised national holdings to 190 million pounds by the end of the month. Of the total in storage, 166 million pounds were frozen fishery products; cured fish amounted to 24 million pounds. The into-storage movement of 8 million pounds of frozen fishery products compares with 5 million pounds last year and a 6 million pound average.

Storage Outlook

Peak storage occupancy in public general cooler space was undoubtedly reached on October 31. With 72 percent of the net storage area reported occupied and with the expected seasonal withdrawals of cooler held commodities during November, cooler occupancy by the end of this month should be 2 to 3 points below the October 31 level.

Although the increase in cooler occupancy during October was greater than normally expected, and did not follow the prevailing 5-year average pattern, there is only one instance on record of an increase in cooler occupancy during November. This occurred in 1947 when cooler held commodities moved contra-seasonally and increased in total weight instead of decreasing.

Freezer space utilization likewise increased faster than the 5-year average trend would indicate. Freezer-held commodities are now at record levels for this time of year and net withdrawals are not likely to be significant until December. It is likely therefore that the current occupancy level will be relatively unchanged by November 31.

"Golden Era" Seen For Frozen Foods

THE frozen foods industry is entering a "golden era" which should see annual consumption pass the three billion pound mark by the end of 1953. Howard F. Lochrie, director of marketing for the Birds-Eye-Snider division of General Foods, made this prediction. This year, he said, industry sales slightly in excess of two billion pounds are expected.

FrozenFoods
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PREPARATION PACKAGING FREEZING STORAGE DISTRIBUTION DESIGN CONSTRUCTION EQUIPMENT

1950 Frozen Food Packs Show Big Increase

A PRELIMINARY report on the 1950 packs of green peas, strawberries and R.S.P. cherries released by the National Association of Frozen Food Packers shows a big increase in each of these products over last year. This is based on reports of individual packers collected and compiled by the association.

Frozen Green Peas

The 1950 pack of frozen green peas totaled 154,448,216 pounds. After declining for three years, this pack jumped to a new record high. The 1950 pack was approximately 36 percent greater than production in 1949. The previous production peak was reached in 1946, with total of 140,602,919 pounds.

Big pack gains were reported both in the West and in the East and South, while production declined in the Midwest. Major increases were indicated for retail sizes and for bulk sizes of over 10 pounds, mostly 30 and 50 pound sizes. While small institutional sizes also increased somewhat, these gains were much smaller than those reported for the other container sizes.

Frozen Strawberries

Frozen strawberry production climbed to a very high level this year. Exclusive of California, the 1950 pack was 141,937,374 pounds, as compared with 98,317,626 pounds in 1949. Only in 1948 was a larger pack produced. Because the packing season in California extends to November, figures on the pack in that state are not included in the attached tables.

Big production gains over last year are indicated for all regions except the West. In the Northeast, South and Midwest, 1950 totals are from 2½ to 3 times as great as the packs in 1949, and are larger even than 1948 totals, when national production reached a record high level.

Container size usage showed some change from 1949. This year, a smaller percentage of the pack went into retail sizes than was the case last year. The 1950 retail pack of some 56½ million pounds represented about 40 percent of the total — while in 1949, approximately 46 percent of the total was in retail sizes. In 1948, the retail pack represented about 35 percent of the total.

TOTAL PACK OF GREEN PEAS, STRAWBERRIES AND R.S.P. CHERRIES BY YEARS SINCE 1942

	Green Peas	Strawberries	R.S.P. Cherries
1942	59,077,163		41,819,884
1943	70,310,152		23,005,362
1944	79,152,398		55,058,949
1945	103,833,553		16,143,827
1946	140,602,919		88,061,401
1947	131,785,783		67,001,731
1948	118,976,557	148,898,503	87,797,699
1949	113,273,030	98,317,626	70,988,702
1950	154,448,216	141,937,374	102,360,984

Frozen R.S.P. Cherries

The pack of frozen R.S.P. cherries reached a record total of 102,360,984 pounds, 44 percent greater than that of 1949, and about 16 percent greater than the large pack of 1948. Major producing regions showed tremendous increases, while production in the West continued declining. Container size usage followed generally the pattern of earlier years, with the 30 pound size accounting for the bulk of the pack.

Production of Concentrate Nearly Doubles

A 1949-50 seasonal pack of 30 to 40 million gallons of frozen citrus concentrate was predicted by C. D. Atkins at a meeting held by the Florida State Citrus Experiment Station for citrus processors. Mr. Atkins, a member of the Citrus Experiment Station is one of the men whose research is responsible for development of the concentrate industry. The volume predicted will nearly double last season's volume.

Mr. Atkins briefly outlined the developments of concentrate processing from the first commercial production in 1945-46 of slightly more than 200,000 gallons to last season's 22 million gallons. He described a two-stage evaporator developed at the Station and showed by graphs the overall increased efficiency of the newly designed concentrate unit.

Frozen Foods Procurement Discussed at Luncheon

AT A luncheon meeting of the Eastern Frosted Foods Association held October 10, top officials in perishable foods procurement in the Office of the Quartermaster General discussed procurement of frozen foods for the armed forces.

Lt. Col. P. T. Hennigar, officer in charge, Quartermaster Market Center, New York, urged the frozen food industry to offer its goods for sale and to clearly define every part of these products. He said that complaints were rare when both buyer and seller have a clear understanding of the kind and quality of goods that is bought or sold.

George A. Baxter, chief, Perishable Section, Subsistence Branch, Supply Division, said that frozen foods for troop consumption must conform to the established policy of the Quartermaster General's office. No pre-fabricating process or specialty foods will be considered; only those already established in the army supply program will be accepted.

Mechanically Refrigerated Cars Provide Low Temperatures for Frozen Foods

FRUIT GROWERS EXPRESS and its affiliated companies will soon put into service 105 refrigerator cars equipped with mechanical cooling units. They will be the first mechanically-operated refrigerator cars to be available on a commercial basis, though test cars have been operated experimentally for some years. Twenty-five of the new type cars are under construction or already finished, and 80 additional cars are on order. The new mechanically-cooled cars will maintain zero temperatures under summer weather conditions.

The railroads and refrigerator car companies have spent large sums in research to provide improved refrigeration service in transit, not only for frozen foods but for the perishable food industry as a whole. The thicknes of insulation in the cars has been substantially increased, air circulating fans and many other improvements have been added, and methods of refrigerating cars have been generally improved.

Check Shows Adequate Refrigeration

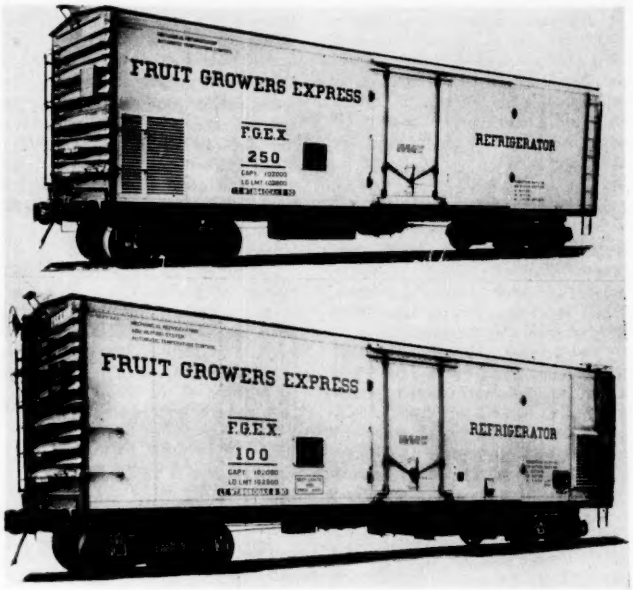
For example, in a recent check of 86 shipments of frozen citrus juice concentrates from Florida in heavily insulated refrigerator cars of Fruit Growers Express Company and associated car companies — Western Fruit Express Company and Burlington Refrigerator Express Company — using ice and 30 percent salt for refrigeration, the average commodity temperature at destination was slightly above 4 F, which is generally considered adequate refrigeration for frozen foods in transit.

As a result of research during the past two years with nine cars equipped with five different systems of refrigeration, Fruit Growers Express Company has equipped 11 additional cars with the "Thermo-King" gasoline propelled refrigerating system manufactured by the U. S. Thermo Control Co., Minneapolis, and 12 cars with diesel-electric refrigerating systems developed by Frigidaire Div. of General Motors Corp.

Various types of cars were tested, including several refrigerated by the ammonia-expansion principle, dry ice, etc. Fruit Growers Express officials indicated they have by no means shut the door on the possibility of utilizing other types of mechanical cooling systems. For the moment, they consider the Frigidaire and Thermo King types sufficiently reliable to put into regular service to the railroads with which the company has contracts.

Frigidaire System

The system, developed by Frigidaire Div. of General Motors Corp., consists of a 34 hp Diesel engine—20 kw Alternator unit to supply power required, compressor, condenser and evaporator coils. The Diesel-Alterna-



The two types of mechanicallly refrigerated cars placed in service by The Fruit Growers Express.

Above, car is equipped with Diesel-electric refrigeration system, developed by Frigidaire Div. of General Motors Corp. In operation, after starting the unit, air is forced through the finned cooling coil by the fans out into top of car loading space circulating to opposite end of car and is forced down around (or through) lading and is redrawn by the fans to be recirculated through the evaporator.

Below, car is equipped with U. S. Thermo control system, comprising two identical self-contained units installed in a compartment at one end of the car. Each unit consists of a 28 hp Crosley water-cooled gasoline engine, 6-cylinder compressor, cooling coil, air circulating fan and controls. Freon is used as a refrigerant. Heating of car with the system is provided by a reverse cycle of refrigeration.

Fruit Growers Express has also ordered 1,020 new refrigerator cars equipped with ice bunkers in addition to the 105 it is equipping with mechanical refrigeration units. These will have six inches of insulation throughout, and are designed so that they can be converted later to mechanical refrigeration.

tor unit with compressor and condenser are located in a compartment at one end of car separated from loading space by an insulated wall. The side walls of this compartment are provided with louvred openings to permit passage of air to the condenser and to engine radiator, etc.

Compressor motor, radiator fan

motor and evaporator fan motor all derive power from the alternator that generates 220 volt AC 60 cycle current. The compressor has capacity for 1½ tons refrigeration at minus 10 F evaporator temperature and approximately 2½ tons at 5 F. Capacity is adequate to produce and maintain zero temperatures under summer weather conditions.

Finned Evaporators

Finned evaporators are located in an insulated recess, integral with car loading space (over top of machinery compartment). There are two motor driven blower fans placed behind the evaporator to force air through the cooling coil out into the loading space. Fuel tanks of 240 gal. capacity are underneath car, sufficient for coast-to-coast trip without refueling.

In operation, after starting the Diesel-electric unit, air is forced through the finned cooling coil, by the fans, out into top of car loading space circulating to opposite end of car, and is forced down around (or through) lading and is redrawn by the fans to be recirculated through the evaporator.

Evaporated refrigerant (Freon) is pumped to and compressed in the compressor from where it passes to the condenser, after condensing it flows as a liquid to the receiver and thence back to evaporator through a controlled expansion valve.

This system is equipped for standby operation by means of electric motors which may be plugged in at stations when operation of the Diesel engine is not necessary, such as for pre-cooling cars, etc.

Thermo-King System

The Thermo King system comprises two identical self-contained units installed in a compartment at one end of the car, there being no ice bunkers. Each Thermo King unit consists of a 28 hp Crosley water cooled gasoline engine, 6 cylinder compressor, cooling coil, air circulating fan and controls. Freon is used as the refrigerant. Each unit is complete and can be readily removed as a package.

The floor racks and wall flues serve as ducts through which air delivery is made. Floor racks have a solid surface extending full width and length of loading space forming a continuous floor duct. Air is forced downward through the cooling coils, under the floor racks, up through the side and end wall flues and over top of load for return to cooling coil chamber for recirculation. To eliminate uneven temperatures during the "off" period of unit operation, an electric battery-powered auxiliary fan is provided which is located at bottom of the cooling coil chamber and automatically starts when operation of both refrigerating units are stopped.

The control thermostat is set so that only one unit will operate when the refrigeration load requirements fall below the point necessary to operate two units. If the load should increase beyond the point where one unit cannot handle it, the second unit will automatically cut in. For precooling both units are in operation, but after the empty car is cooled to the temperature level at which the temperature control is set, one of the units will ordinarily protect the load most of the time thereafter. The temperature control thermostat has a range of minus 5 to plus 60 F.

These units each have approximate capacity for 1½ tons refrigeration at 0 F and 2½ tons at 23 F. One unit in operation is usually sufficient to maintain zero degrees in car except under abnormally high summer temperature conditions when second unit will intermittently operate for short periods.

Each unit is equipped with an automatic or time regulated defrosting device which goes into operation every seven hours.

Reverse Cycle Heating

Heating of car with the system is provided by a reverse cycle of refrigeration. The system automatically switches over to the heating cycle when outside temperature becomes low enough to so require. Reverse cycle heating also occurs during the defrosting periods above mentioned.

The engines are equipped with a "dry sump" oiling system providing five gallons of lubricating oil for each engine. A combination starter-generator is directly mounted on the crank shaft of each engine. There are six storage batteries (6 volts each) housed in two metal boxes beneath the car; three batteries for each refrigerating unit. Two 160 gal. fuel tanks are located beneath end of car.

The Fruit Growers Express said in a statement concerning the new cars: "The railroads and refrigerator car companies of the country are not lagging behind in providing transportation needs of the frozen foods industry. They have not only kept pace with the rapid growth of the industry but have made that growth possible by providing means of accomplishing the present wide distribution of frozen foods throughout the country."

Frozen Foods

Water Officials Discuss Air Conditioning

THE amount of air conditioning being added each year has stabilized and can, in the future, be expected to follow the general business and building trend, stated R. A. Gonzalez of the Airtemp Division of Chrysler Corporation, in speaking as a member of a panel discussing "Air Conditioning Demands" at the annual convention of the Chesapeake Section of the American Water Works Association. Mr. Gonzales emphasized, however, that this general observation did not apply to special uses of air conditioning and particularly not to room air conditioners, which have experienced such remarkable expansion in sales volume in the past few years.

Mr. Gonzalez said that manufacturers of air conditioning equipment are among the nation's leaders in advocating and practicing water conservation. Where water supply shortages or water disposal difficulties are being experienced by municipalities, regulations on air conditioning installations to curb the use of water would generally make only a slight contribution to the solution of a community's over-all water problem. The use and waste of water by all local commercial and industrial users requires careful survey and attention, Gonzalez stated, if the municipality's water difficulties are to be successfully overcome.

Industry Leads in Water Conservation

The speaker reviewed the fact that the refrigeration and air conditioning industry has been an outstanding leader in water conservation and water conservation methods. Cooling towers, evaporative condensers and similar water saving devices have been developed simultaneously with all types of air conditioning and refrigeration machinery since the start of the industry.

This has come about because water and power are the two basic operating costs in the use of this equipment. In many other uses of water, the cost of water is a minor consideration in the overall result and hence the possibilities of economizing on water commands a much smaller interest. He stressed particularly the point that most industrial uses of water lend themselves as readily to water conservation as does air conditioning equipment.

Railroad Opens New Cold Storage Room

(Continued from page 56)

pay any extra charge for use of the cooling facilities, which are provided when requested by the shipper. They occupy an area approximately 700 feet long by 42 feet wide and 16 feet high on the south side of Pier 27. This storage space is intended for holding fruit at optimum temperature during the few hours between unloading from the refrigerator cars until buyers have made their early-morning inspection of the displayed fruit and the carloads have been sold at auction on the piers and removed by truck. Buyers' trucks may enter the cooled area to load without disturbing the operation of the refrigeration system.

Chicago Section, A.S.R.E.

THE Chicago Section of the American Society of Refrigerating Engineers held the regular monthly meeting October 12 at the Builders Club, with an attendance of 74 members and guests. Program Chairman Richstaedt reported on the arrangements for the December meeting which include an inspection of the Bell and Gossett plant at Morton Grove.

The speaker of the evening, Earl R. Michel, assistant manager, air conditioning and refrigeration division of Worthington Pump & Machinery Corp., Harrison, N. J., made a very interesting and instructive presentation on the subject of "Low Temperature Refrigeration Applications."

Mr. Michel discussed the characteristics and limitations of a number of refrigerants used in low temperature applications. He described a number of installations in this field with the addition of illustrated slides showing arrangement of equipment and tracing the refrigerating cycle.

The general discussion following Mr. Michel's paper was an indication of the interest and enthusiasm with which it was received.

Evansville Section A.S.R.E.

GUEST speaker at the September meeting of the Evansville Section, American Society of Refrigerating Engineers was Don Ping, Evansville College football coach. He showed films of the Refrigerator Bowl football game and gave his forecasts for the current football season. Robert Eichdown, production engineer at International Harvester explained the design of "Dri-Wall" freezers.

Air Conditioner Rating Standard Issued by ASRE

AN ASRE Standard for testing and rating air conditioners (16R) that will be of considerable value to all manufacturers of this type of equipment has been issued by the American Society of Refrigerating Engineers. This standard, the result of mature deliberation by a committee of well qualified engineers, was approved by ASRE at its last annual meeting in Chicago, December 1949.

It covers self contained air conditioners, room air conditioners, remote type air conditioners, heat pumps and oil and gas fired air conditioners, and consists of a revision of two former ASRE Standards, namely No. 16, Methods of Rating and Testing Self Contained Air Conditioning Units for Comfort Cooling (1940), and No. 13, Methods of Rating and Testing Air Conditioning Equipment (1936).

An innovation provided in the new standard is the use of the calibrated Room Calorimeter which is designed primarily for testing room air conditioners of the free delivery type. Inasmuch as this type of calorimeter requires no attachments to air inlets or outlets, it avoids the possibility of influencing the ratings, as might be the case where such attachments are applied to certain types of room air conditioners.

September 1951 has been recommended as the effective date for that portion of the Standard relating to free delivery room air conditioners. In the interim, use of The Psychrometric Calorimeter is recommended as an alternate method of testing.

Western Michigan A.S.R.E.

THE October meeting of the American Society of Refrigerating Engineers, Western Michigan section, was held Wednesday evening, October 9 in the Hunt room of Fox Deluxe Brewing Co. in Grand Rapids. An inspection trip of the plant and its refrigeration equipment started promptly at 6:45 p.m. at the Fox plant, after which a Dutch lunch was furnished members and guests.

Air Conditioning with Air Driven Equipment

A NOVEL idea for air conditioning of existing buildings is being tested in a New York City office structure. The basic principle of the system is to circulate compressed air through steam supply pipes to rooms to be air conditioned. The compressed air drives unit equipment in the room and in itself is a source of cooling for the room.

Book Review

REFRIGERATION ENGINEERING, Second Edition, By H. J. Macintire, University of Illinois and F. W. Hutchinson, University of California. Published by John Wiley & Sons Inc., New York. Illustrated. 610 pages. Heavy cloth binding. Price $6.50. For sale by Nickerson & Collins Co., Chicago 44, Ill.

The first edition of this book was published some thirteen years ago, following publication seventeen years previously of a series of twenty articles on refrigeration, all written by H. J. Macintire, professor of refrigeration at the University of Illinois. The present second edition, based on plans and ideas formulated by Professor Macintire before his death, was written in collaboration with F. W. Hutchinson, professor of Mechanical Engineering at the University of California. It is a modern, expanded edition, providing an up-to-date guide to the essential principles and the latest commercial advances in refrigeration, with new material on transient phenomena, heat pumps, radiation effect on cold storage temperatures, and comfort panel cooling systems. In addition, more than thirty full-page graphical solutions for use in common refrigeration problems are provided.

Finland Office Building Air Conditioned

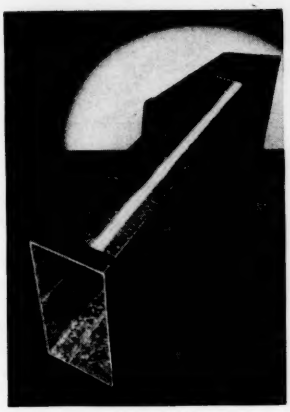
THE world's northernmost air conditioning installation of its kind is to be supplied by Carrier Corporation, Syracuse, N. Y., for the 8-story headquarters building of Industricentrum AB now under construction in Helsinki, Finland.

Helsinki is situated at 61° north latitude, about the same as Anchorage, Alaska, but enjoys milder weather, with a 21.4° average in January and a 63.8° average in July. The system will be for year-round operation —heating and ventilation in winter, and evaporative cooling in summer.

The first six stories of the building, a center for promoting Finland's domestic and export trade, will be serviced by the initial European installation of Carrier's revolutionary Conduit Weathermaster System, which distributes conditioned air under pressure through small, space-saving conduits. There will be a Weathermaster unit under each window, permitting individual control regardless of how offices are partitioned.

Sixty hotel rooms for the accommodation of foreign guests on the seventh floor, and restaurants occupying the top floor, will be air conditioned by a conventional duct system. The building is scheduled for completion in March, 1952.

KNICKERBOCKER PRODUCTS ON DISPLAY



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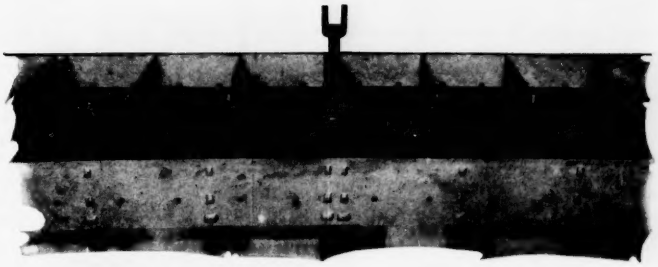

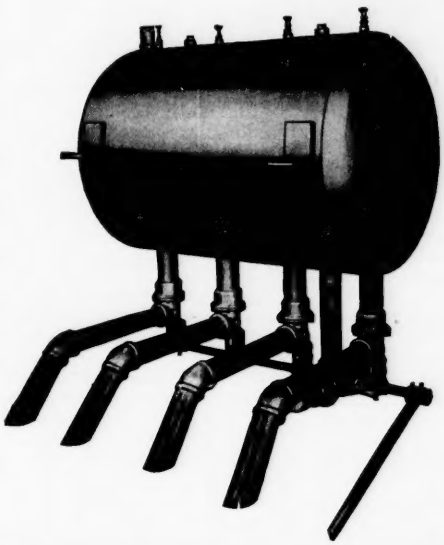

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Cathode Rays Preserve Foods Without Refrigeration

BREAD, meat, and other foods, have been preserved for periods as long as a year without refrigeration, as a result of bombardment with 800,000-volt electrons, or cathode rays, in experiments at the General Electric Research Laboratory. The rays kill molds and other organisms which normally cause such foods to spoil.

This was reported to the National Academy of Sciences by Elliott J. Lawton, of the General Electric Research Laboratory. The Academy held its autumn meeting at the laboratory, as part of a program dedicating the new laboratory's buildings and celebrating its fiftieth anniversary.

Mr. Lawton stressed that his findings resulted from experimental work and that it was too early to predict possible commercial applications. However, he added, sterilization by cathode rays should be particularly attractive for materials which would be damaged or destroyed by the heat required to sterilize them by usual methods. Absorption of a germ-killing dose of electrons raises their temperature only slightly, he pointed out. After the materials have been sterilized, they must be kept away from the open air or the micro-organisms that cause spoilage would re-enter.

Produce Chemical Changes

It was pointed out that cathode-ray sterilization has some limitations. In some cases it causes changes in color, taste, and odor of the material, which, if not corrected, would be undesirable. He reported also that cathode rays produce chemical changes in many materials. Compounds known as enzymes, which aid in the process of digestion, are deactivated.

Plants grown from seeds that have been irradiated may produce flowers that show changes in color from their parents, he said. These are given much smaller doses than used for sterilizing food stuffs, otherwise the seeds were killed.

To produce the cathode rays, a modified General Electric million-volt X-ray unit was used. These units have been widely employed in hospitals for cancer therapy, as well as in industry, where thick castings may be X-rayed in order to find hidden defects.

In the X-ray outfit, a stream of electrons is speeded to a total energy of a million volts in a three-foot accelerating tube. At the end, they hit a tungsten target and X-rays are produced. For cathode-ray production a stainless steel "window" is substituted for the target, and the electrons themselves emerge into open air. Materials tested have to be exposed within a few inches of the window, as cathode rays are quickly absorbed in air.

Mr. Lawton pointed out that his experiments represent a continuation of those begun in 1925 by Dr. W. D. Coolidge, now director emeritus of the G-E Research Laboratory, who first produced cathode rays of high intensity in the open air, and studied their effects. In recent years several other groups have also been conducting research in the field, he added.

Seeley Heads A.S.H.V.E.

THE nomination of Lauren E. Seeley, dean of the College of Technology and director of the Engineering Experiment Station, University of New Hampshire, Durham, N. H., for president of The American Society of Heating and Ventilating Engineers in 1951 was announced at the society's headquarters, 51 Madison Avenue, New York. Nominees for other offices submitted by the ASHVE nominating committee are: First vice president, Ernest Szekely, president of the Bay-

Lauren E. Seeley

ley Blower Co., Milwaukee, Wis.; second vice president, Reg F. Taylor, consulting engineer of Houston, Tex., treasurer, Howard E. Sproull, division sales manager, American Blower Corp., Cincinnati, Ohio.

Currently serving as first vice president of the A.S.H.V.E. Dean Seeley attended Yale University, where he received his Ph.B. degree in 1921, his M.E. in 1924 and an LL.B. in 1935.

While preparing for his degrees he taught courses in mechanical engineering at Yale and in 1925 was put in charge of a course in heating and ventilating, remaining at the University until 1945 when he was appointed to his present position at the University of New Hampshire.

During the war, Dean Seeley served as regional advisor in Connecticut and Rhode Island for the U. S. Office of Education and was consultant to the OPA on fuel oil and coal rationing.

Research Projects on Air Conditioning

THE American Society of Heating and Ventilating Engineers has signed agreements for cooperative research in fundamental problems of heating, ventilating and air conditioning with seven colleges and universities, it has been announced by Lester T. Avery, of Cleveland, president of the society.

The research agreements for a one-year period are with the College of Medicine, University of Illinois, Chicago; Case Institute of Technology, Cleveland; Kansas State College, Manhattan, Kansas; Michigan State College, East Lansing, Mich.; Cornell University, Ithaca, N. Y.; University of Minnesota, Minneapolis, and the University of Florida, Gainesville. An eighth cooperative research project is in progress at Columbia University under the terms of a contract in effect since January of this year.

Under such agreements, a grant of funds is made by the ASHVE to each institution which in turn utilizes its own laboratory facilities and faculty to perform the research under the direction of a Committee on Research technical advisory committee.

Both the research programs at the society's laboratory, in Cleveland, and at cooperating institutions are supported by an allocation of 40 percent of the annual membership dues.

Advertising Council Issues Educational Publicity

THE Advertising Council, representing leading advertising agencies, has sponsored a number of educational campaigns through publicity and advertising that are of much public interest.

In October a fire prevention campaign was released which attained national circulation. A total of 21,000 home fire prevention ad kits were distributed to the newspapers and members of the National Fire Protection Association. Don Stuart, advertising director of the Texas Company was the volunteer coordinator for the campaign and the ad kits were designed by Erwin Wasey & Co. Inc., the volunteer agency in the campaign.

To commemorate the four score and seventh anniversary of Lincoln's Gettysburg address, which was delivered November 19, 1863, the Council in cooperation with the American Heritage Foundation issued a release to newspapers throughout the country. Free mats of a 1000-line advertisement and 8000 proofs were made available. Donald B. Hause, advertising manager, Armour & Co., was volunteer coordinator.

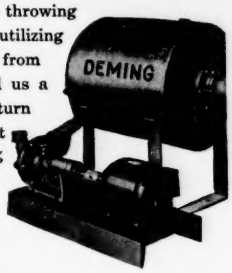
OUR DEMING DISTRIBUTOR SAVES US TIME AND MONEY

Here's an example:

"A distributor salesman kept needling us to install a Deming Deep Well Turbine Pump," said a plant owner. "Water was costing us around $1500.00 a year. Frankly, we doubted we could do better by pumping from a well. About a year ago we decided to try out the salesman's suggestion. We're glad we did! Our Deming Turbine Pump saves us about $600.00 a year."

Here's another example:

"That same salesman," continued the plant owner, "told us we were throwing away good money by not utilizing the hot water condensate from our steam coils. He sold us a Deming Condensation Return Unit for the job. That unit is saving us at least 12% on fuel alone."



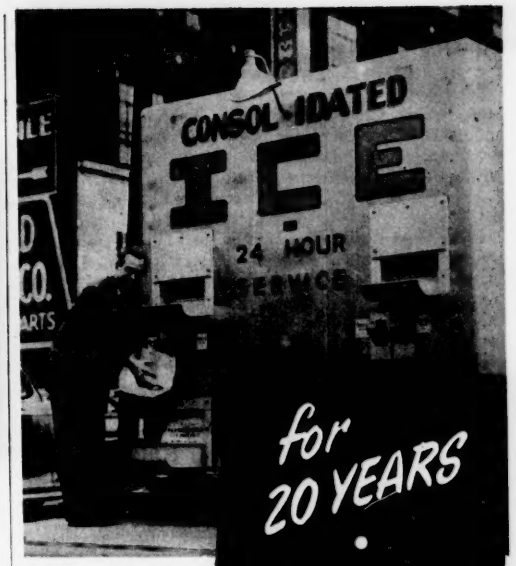
One of a complete line of Deming Condensation Return Units and Boiler Feed Pumps.

There's a Deming Distributor in YOUR area to help YOU save time and money on a wide variety of pumping operations. Call him in or, if you don't know where to reach him, write us.

THE DEMING COMPANY • 529 Broadway • Salem, Ohio

Deming

DEPENDABLE PUMPS



Another customer casts his vote—with profitable dimes and quarters—for the cash and carry convenience of the Sturdy-Built Ice Vending Station operated by Consolidated Ice Co., Pittsburgh, Pa.

for 20 YEARS

..BETTER IN THE LONG RUN

S&S *Automatic* Ice Vending Stations

Put a Profit Margin into Marginal Areas!

Eliminate money-losing routes. Increase volume in good districts. As Consolidated and hundreds of other merchandisers have discovered, *it cuts a lot of ice* — and more ice — when customers quickly learn to rely on S&S *daily* 24-hour service.

And big distributors, guided by experience, have learned to choose S&S *solid* construction and trouble-free mechanism, *completely* factory built . . . backed by 20 years of actual production . . . delivered ready to load and plug in . . . ready to deliver!

Write for details, specifications, and new low prices.

S&S ICE VENDING MACHINES

S&S VENDING MACHINE CO.

670 Lincoln Avenue, San Jose, California

New Tool for Problems of Air Distribution

THE heated-thermocouple anemometer, combined with an air-temperature thermocouple, is a simple and useful tool for room air distribution problems, H. B. Nottage, research associate at the Research Laboratory of the American Society of Heating and Ventilating Engineers, Cleveland, Ohio, reported to the society at its semi-annual meeting at Muskoka, Ont. Inherent flexibility of design and application of the anemometers together with inexpensive construction and adaptability to standard indicating or recording devices are factors which favor diverse practical use of such instruments, it was declared in a paper, "A Simple Heated-Thermocouple Anemometer," written by Mr. Nottage but read by title.

"A simple yet reliable instrument for measuring low air velocity is essential in research on air distribution in rooms," his paper read. "The heated-thermocouple anemometer is one type of remote-reading instrument which has shown promise for obtaining time-mean velocity data."

Mr. Nottage's paper was a report on preliminary experience for units which have been built and calibrated for experimental purposes at the ASHVE laboratory for the velocity range 30 to 1500 feet per minute.

"The temperature difference between an electrically heated thermo-junction and a differentially connected unheated thermo-junction similarly placed in a fluid stream can be related to the velocity by calibration," it was emphasized. "Some commercially available anemometers employ this principle. One non-directional variation developed initially for cold storage research employs the transient cooling of a small heated sphere."

The anemometer was described as having a small streamlined tip containing an electrical heating element wound about a thermocouple junction. The unheated junction is exposed directly to the air stream and mounted opposite thereto is an independent thermocouple for measurement of air temperature. The heated tip is supported on the four lead wires in order to favor maximum convective heat loss and to avoid disturbance of the fluid stream.

In his paper, Mr. Nottage said that the present design is intended for use in free-space regions, where the velocity variation across the distance of an inch or two is negligible. More compact assemblies could be built for use in regions of noticeable velocity gradients and near surfaces.

Materials Handling for Produce Dealers

WAYS by which fresh fruit and vegetable distributors can reduce the cost of handling produce, through better use of equipment, are explained in an illustrated report issued by the Production and Marketing Administration, U. S. Department of Agriculture. Reductions in certain handling costs of 20 to 80 percent are possible with the improved methods explained in the report. It shows methods of using hand trucks, skids, pallets, and other materials-handling equipment which distributors may already own.

The study on which the report is based is part of a larger project, under the Research and Marketing Act of 1946, covering the handling of many kinds of packages of farm and food products in stores and warehouses.

In developing the improved methods, Department industrial engineers and economists visited wholesale fruit and vegetable distributors in several parts of the country. They analyzed the methods of handling in use, then applied modern engineering principles to the same tasks and compared the resulting new methods with the old.

Examples of improved methods covers principally unloading refrigerated rail cars and trucks. While only part of the handling necessary, this is an important cost to the trade.

The report explains that a lack of balance among crews and equipment contributed to the relatively high costs of handling fresh produce. Methods of analyzing handling tasks and properly assigning workers and equipment which can reduce the cost of the entire handling operation are shown in the report.

The authors found that fruit and vegetable dealers can make more use of the "unit load" principle. A unit load is made up of several packages grouped together so that they may be picked up, transported, and stored or stacked as a unit. Unit loading helps distributors by reducing the number of rehandlings in storing produce, reduces the number of trips required in moving produce, and reduces spoilage, deterioration, and damage because fewer handlings are required.

The report is entitled, "How Fresh Fruit and Vegetable Distributors Can Get More Out of Their Materials Handling Equipment," and is available from the Information Branch, Production and Marketing Administration U. S. Department of Agriculture, Washington 25, D. C.

Refrigeration Expects Higher Priority Rating

THE commercial refrigeration industry in the days ahead can expect to have a much higher priority rating under any government-sponsored materials control program than they had during World War II. George S. Jones, vice president of Servel, Inc., of Evansville, Ind., told the October meeting of the Refrigeration and Air Conditioning Guild of New York.

Speaking on an industry problem forum, he predicted that the industry, as a result of this higher rating, should be able to operate without the confusion that was part of its picture during the last arms push by the government. Mr. Jones based his prediction on two points:

1—Washington officials had a much clearer picture of the industry and its role in the nation's economy in the closing days of the last war, as well as in the period immediately following.

2—Government agencies concerned with the problems of materials control and allocation today are turning more and more for advice to men of practical experience in the affected fields.

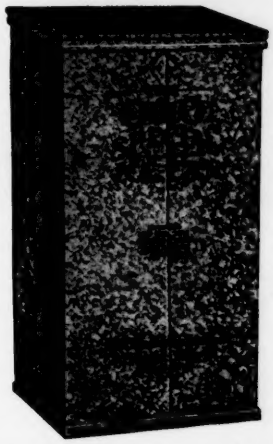
He attributed much of this more favorable picture to the work of trade associations in getting over the story of their industries to government officials through pamphlets and other material.

While admitting that some confusion exists today in Washington over the role various agencies are to play in the present situation, Mr. Jones did not see this as too disturbing a factor at present. As a matter of fact, he suggested that this competition was a healthy sign and said that the big saving factor in the whole picture was the fact that the National Security Resources Board, headed by Stuart Symington, was coordinating the work of the various agencies.

He cautioned industry members not to allow their self-interest to interfere with either thinking or action. He suggested that, if the industry would use as the basis of its relations with Washington the two points of 1, the contribution it could make to the arms or defense program and 2, the efficiency of the industry itself, it would find that these two points would, in the long run, serve their self-interest best.

He also added that individual effort would accomplish very little and that industry members should work through their associations rather than by themselves or with one or two other individuals.

OHIO SPECIAL ICE CANS



Double Riveted
Welded
Integral Tube Cans
Arctic Pownall Cans
Can Baskets
Condenser Trough

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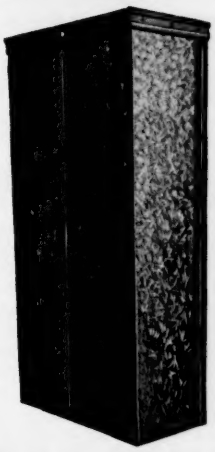
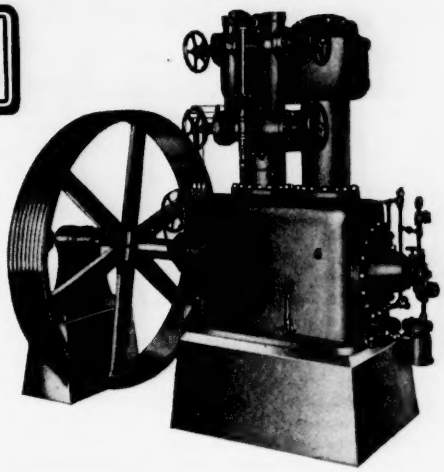
Industrial Trucks
and Trailers



THE OHIO GALVANIZING & MFG. CO.

NILES — Established 1902 — OHIO

Sterling DEPENDABLE REFRIGERATION



The phrase "STERLING DEPENDABLE REFRIGERATION" is more than a slogan—it's a fact.

Built with rugged strength for endurance, with advanced design for efficiency and economy of operation, STERLING Ammonia Compressors are the product of more than fifty years of "know how" in the manufacturing of refrigeration machinery and equipment.

A complete range of sizes insures the correct compressor for each application.

Deliveries are, at present, current—most models of compressors are available from stock.

For complete information, see your nearest STERLING distributor, or write the factory.

REYNOLDS MANUFACTURING CO.

SPRINGFIELD — *"Builders of Fine Refrigeration Equipment"* — MISSOURI

Produce Packers Seek Better Retail Refrigeration

THE Produce Prepackaging Association will set up immediately a committee of its members to work with commercial refrigeration suppliers in developing refrigeration equipment to reduce substantially huge annual waste of prepackaged fruits and vegetables in retail stores. Establishment of the committee was authorized by the group's board of directors during a meeting in the Commodore Hotel, Jersey City, N. J.

The association consists of 150 grower-shippers, wholesalers and brokers who prepackage 10,000,000,000 of the estimated 35,000,000,000 pounds of fresh fruits and vegetables sold annually. The retail volume of the prepackaged produce industry is more than $1,000,000, according to Ralph David, asso ciation secretary.

The annual loss through waste and spoilage because of inadequate refrigeration equipment and improper handling at the retail level runs from 5 to 30 per cent on a tonnage basis and 20 per cent on a dollar volume basis. These loss estimates were supplied by Dr. Charles W. Hauck, a member of the association's board. Dr. Hauck also is in charge of the fresh fruit and vegetable marketing section, extension service, United States Department of Agriculture.

Equipment is Called Lax

Declaring that commercial refrigeration suppliers have failed to develop anything like appropriate and adequate equipment for preservation of products handled by association members, Mr. David said:

"The efforts of the commercial refrigeration industry have gone in other directions, overlooking the importance of refrigeration in the proper handling of prepackaged fresh fruits and vegetables." The task of the new committee, he said, will be to see that appropriate equipmnet goes into quantity production.

Mr. David emphasized that lack of proper refrigeration facilities is mostly but not entirely responsible for huge annual waste. Improper handling by retailers also plays a significant part, he said. At the board meeting a comprehensive educational program to teach retailers how to handle properly prepackaged produce was approved. The program will begin formally next April.

Spearheading the program will be distribution by the association to several thousand retailers throughout the country of a retailers handbook on prepackaging. The booklet was prepared by the association and the Agriculture Department's extension service.

To Cooperate with Retailers

The prepackaging group, Mr. David said, will cooperate with all retail associations handling its products in supplying information on proper handling to be passed on to memberships. Packaging suppliers, he added, will underwrite a large retail advertising campaign in trade papers.

Although retailers stand in greatest need of refrigeration equipment, a shortage also exists at the grower-shipper and terminal market levels, Mr. David declared.

At any trade level, he said, refrigeration is essential for proper handling of artichokes, asparagus, berries, broccoli, brussel sprouts, cauliflower, celery, cherries, grapes, limes, slaw and salad, sweet corn, spinach and kale, lettuce, mushrooms and pears.

Korean Invasion Changes Status of Food Reserves

GOVERNMENT-owned stocks of perishable foods, including 159 million pounds of butter, 50 million pounds of cheese, and 96 million pounds of dried eggs have become "vital reserves" instead of "burdensome surpluses" since the Korean invasion, according to M. J. Hudtloff, Director of Transportation and Warehousing for the United States Department of Agriculture.

"The Department's stocks of food, feed, and fiber are doing much to fill demands and stabilize prices," Mr. Hudtloff declared in an address to the North Atlantic States Chapter of the National Association of Refrigerated Warehouses. Members of the organization are operators of the principal cold storage facilities along the Northeastern seaboard.

Reviewing the government's farm price support program, Mr. Hudtloff cited the increased productivity of the average farmer as a leading factor in the accumulation of vast stores of government-owned agricultural commodities. He said, however, that such a capacity for production is the really important factor in meeting emergencies such as that which currently confronts the nation.

Increased use of farm machinery, the extensive planting of hybrid varieties, broader use of chemicals for the control of insects and weeds, increased use of fertilizers, and the widespread adoption of sound conservation measures were designated by Mr. Hudtloff as contributing much to the heavier crop yield of the American farm.

In addition to the record stocks of perishable foods on hand as of November, 1950, there were in the government inventory at the outbreak of the Korean war: 332 million bushels of corn; 328 million bushels of wheat; 31 million bushels of barley; 41 million hundredweight of grain sorghum; 10 million hunndredweight of dry edible beans; 472 million pounds of linseed oil; 17 million pounds of cottonseed oil; and 3.4 million bales of cotton.

"Farmers also have learned how to expand the production of livestock and livestock products through the practical application of scientific animal husbandry principles," the government official stated. This overall expansion of farming "know how" will continue to mean abundance in the United States during either peace or war, he said.

Defense requirements have changed the storage situation greatly, Hudtloff concluded. "Several months ago, our main problem was one of securing sufficient storage space. Today we are concerned with the matter of moving commodities out of storage in sufficient quantities to meet emergency requirements."

British Advised to Use Ice in Cold Drinks

A BRITISH travel expert has proposed a drastic remedy to make England merrier for tourists—especially Americans loaded with dollars. He would have British bars put ice in their drinks. The standard British practice is to serve all drinks at room temperature — pop, wine, gin, beer, whiskey, or water. The latter is seldom served.

"We should start a campaign," said Sir Guy W. Roper, president of the Chamber of Shipping of the United Kingdom. "The first thing we might do is ask for ice in our drinks next summer in refreshment rooms where ice still is regarded, apparently, as a luxury."

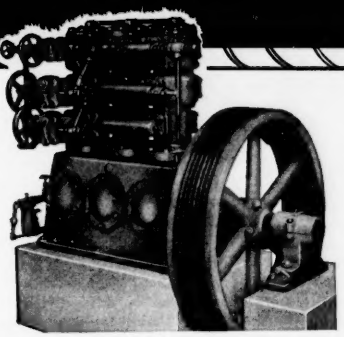
Refrigerators Smuggled Into Canada

EIGHT men have been arraigned in Montreal Canada, accused of smuggling $53,000 worth of refrigerators into Canada from the United States. Several additional arrests may be made in the clean-up against the smuggling of refrigerators and other commodities, according to the Canadian Mounted Police.

A CASE OF SIMPLE ARITHMETIC

1 EQUALS 2

Here's HOWE...



CUT COSTS! SAVE 4 WAYS!

You get 2 compressors in one when you get a Howe Multiple Effect Compressor. Operating on both high and low temperature work, this compressor does the job of two standard units . . . with an average power saving of 35%! You have only one installation charge. Maintenance costs . . . working parts same as standard compressor . . . and space requirements are also reduced 50%! Capacity is increased with lower h.p. per ton. The Howe Multiple Effect Compressor affords more plant flexibility with minimum equipment expenditures!

Over 38 years of specialized, field-tested "know-how," Howe produces equipment that assures the constant exact humidity and temperature control necessary to keep your products at top profit-producing quality. Consult Howe engineers—no obligation, of course.

Read what a Texas user writes—

"Well, Sir! Your 3-cylinder 9"x9" is doing the same amount of work on the Low suction as do either of the 12"x12" compressors, and then goes right on and makes 24 tons of ice every 24 hours on the MULTIPLE EFFECT at practically no extra cost! All this is done on present equipment, which was already on 100% load, and with no extra ice making machinery added. At wholesale prices this is approximately $3000 per month. Incredible! What other system could do anything anywhere near like this? And on top of all the rest, the compressor is very quiet in operation."*

*Letter on file

HOWE

ICE MACHINE CO.

Distributors in Principal Cities ● *Cable Address: Himco, Chicago*

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Write for details about available distributor territories. Your inquiry is invited.

PROTECT

TANK TOPS ● LIDS ● WALLS MACHINERY ● FLOORS AND OTHER SURFACES!

KEEP THEM CLEANER . . .

They'll Even Last Longer When Properly Painted!

CSCO

GREY PAINT

Is Made Especially For Ice Plant Service

GUARANTEED AS GOOD OR BETTER THAN ANY OTHER PAINT OR COATING ON THE MARKET OR YOUR MONEY REFUNDED

CSCO Can, Coil and Condenser Coating is a Black Phenolithic Compound . . .

Excellent for coating ice cans above or below brine levels. Also condensers and all other surfaces immersed in either brine or water or exposed to the atmosphere.

PACKAGED IN ALL SIZE CONTAINERS

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Temperature Approaching Absolute Zero Produced by New Research Equipment

THE National Research Council of Canada has announced that research equipment has been installed in its laboratories for producing temperatures within a few degrees of absolute zero. This recently-developed equipment is called the Collins Helium Cryostat and was made in the research and engineering laboratories of Arthur D. Little, Inc., in Cambridge, Mass. The low temperature is produced by the liquefaction of helium, the hardest of all gases to liquefy. The temperature produced is approximately 456 degrees below zero on the Fahrenheit scale, only 4 degrees above absolute zero. The new equipment provides a readily available source of very low temperatures for the study of chemical and physical reactions. At room temperatures random thermal agitation often masks the subtle effects being investigated, but at these low temperatures thermal agitation is to a great extent eliminated.

When matter is so cold that the molecules almost stop moving, many strange properties appear. If an electric current is started in a metal ring, it will continue to flow indefinitely, with the ring showing no electrical resistance. Liquid helium at low temperatures has no viscosity at all, so that if a beaker of it is set to swirling it will continue to swirl for a very long time. Also it will creep up the sides of the beaker and down the outside, so that it appears to dribble out of the bottom. Many materials change their color at temperatures close to absolute zero. Just why these things happen scientists do not know, but they hope to find out eventually.

The significance of extreme low temperature research is indicated by the 1949 award of the Nobel Prize in Chemistry for work at temperatures close to absolute zero.

Helium was first liquefied at Leiden, Holland in 1908, but because it was so difficult and required such an extensive amount of equipment, little work was done in this field. After World War II Arthur D. Little, Inc., undertook development work on simplified helium liquefaction systems under the direction of Dr. S. C. Collins of the Massachusetts Institute of Technology and Dr. H. O. McMahon of Arthur D. Little, Inc.

The fascination of liquid helium itself derives from phenomena that occur when its temperature is reduced to 2.19 degrees K. (approximately -456 F.). Picture a dewar of freshly made liquid helium inside a dewar of liquid air. There are narrow vertical slits of unsilvered glass on both dewars, and when they are turned to coincide, a window is formed through which the experimenter observes the liquid. Both the liquid air and the liquid helium, frigid though they be, are boiling just as water boils in a teakettle at 373.1 degrees K. (approximately 212 F.). The air bubbles are large; the helium bubbles are small. The inside dewar of liquid helium is connected to a vacuum line which draws off the vapor so that the remaining liquid will get still colder.

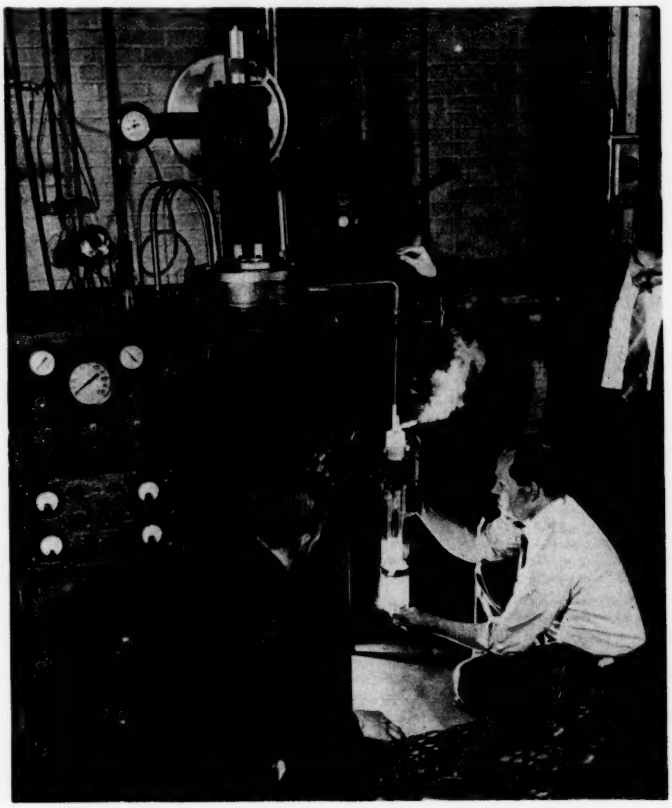
As the helium reaches 2.19 degrees, the boiling seems suddenly to stop. The surface is as smooth as glass, although jellylike ripples may run across it. Its temperature continues to drop. Vapor is still formed and drawn away, but it escapes without noticeably ruffling the surface. The helium has evidently entered a new state known as helium II.

Is it still a liquid? Liquids have viscosity, and in some respects helium II has none. It flows through the narrowest of orifices. Low-temperature workers were annoyed by the difficulty of making leakproof containers for it until they realized that this was demonstrating a new kind of matter.

Is it a gas? Helium II atoms are more mobile than the atoms and molecules of gases. But they obey the law of gravity as a liquid does, remaining at the bottom of containers.

Is it a solid? There is no solid as agile as helium II; it flows, pours or dances through the narrowest crevice. Besides there is a solid helium. While it cannot be obtained under atmospheric pressure with the lowest temperatures yet reached, it has been obtained by building up the pressure to 25 times that of the atmosphere.

The availability of Collins Helium Cryostat makes possible the extreme low-temperature research leading to a better understanding of the fundamental laws of matter.



Transferring liquid helium from cryostat to an external dewar.

LOWEST PRICED
Heavy-Duty Scoring Machine

The Perfection-Made
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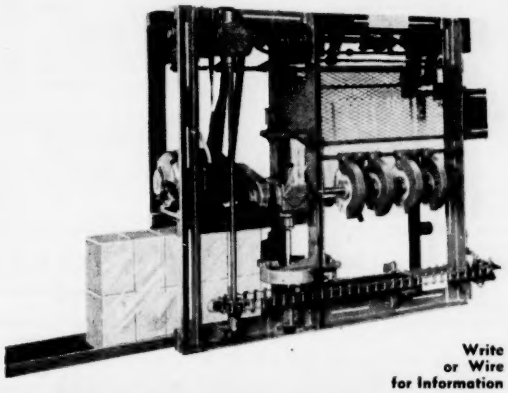
Scoring Machine is the lowest priced, completely automatic, Heavy-duty Scoring Machine on the market. Hundreds of Miller machines are in use all over the country and have been for many years.
Like all other Perfection products, the MILLER is sturdy, fast, economical in operation and maintenance.



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On Perfection Miller, Perfection Special, Regular and Conveyor-Type

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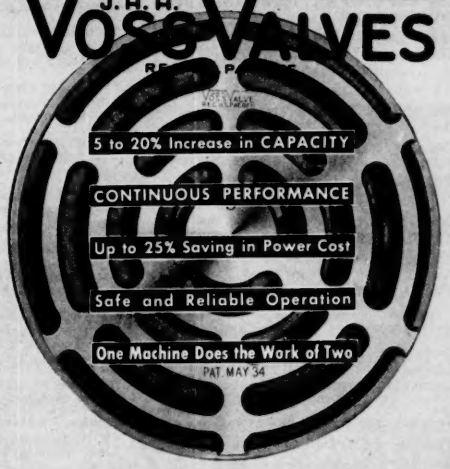
WELL WATER SYSTEMS
VERTICAL TURBINE PUMPS

For Better Results – *Install*

J. H. H. VOSS VALVES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Up to 25% Saving in Power Cost
Safe and Reliable Operation
One Machine Does the Work of Two
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CONVENTION CALENDAR

AMERICAN SOCIETY OF REFRIGERATING ENGINEERS
December 3-8, 1950
Commodore Hotel, New York, N. Y.
M. O. TURPIN, Secretary

CALIFORNIA ASSOCIATION OF ICE INDUSTRIES
December 4-5, 1950
Fairmont Hotel, San Francisco, Cal.
JACK L. DAWSON, Exec. Mgr.

SOUTH CAROLINA ICE MANUFACTURERS ASSOCIATION
December 11-12, 1950
Columbia, S. C.
GEORGE L. ENGLISH, Secretary

MISSOURI ICE MANUFACTURERS ASSOCIATION
January 8-10, 1951
Hotel President, Kansas City, Mo.
V. A. ESPHORST, Secy-treas.

KANSAS ASSOCIATION OF ICE INDUSTRIES
January 8-10, 1951
Hotel President, Kansas City, Mo.
C. A. BERKHISER, Secretary

OKLAHOMA ASSOCIATION OF ICE INDUSTRIES
January 21-23, 1951
Biltmore Hotel, Oklahoma City, Okla.
HARRY T. HUDSON, JR., Exec.-Secy.

THE REFRIGERATION RESEARCH FOUNDATION
February 2-4, 1951
Statler Hotel, Boston, Mass.
H. C. DIEHL, Director

AMERICAN WAREHOUSEMEN'S ASSOCIATION
February 5-8, 1951
Statler Hotel, Boston, Mass.
WM. DALTON, Executive Vice-pres.

NATIONAL ASSOCIATION OF REFRIGERATED WAREHOUSES
February 5-8, 1951
Statler Hotel, Boston, Mass.
WM. DALTON, Executive Secretary

FACT FINDING CONFERENCE
February 11-13, 1951
Kansas City, Mo.
CLIFF CARPENTER, President

SOUTHWESTERN ICE MANUFACTURERS' ASSOCIATION
February 14-16, 1951
The Hotel Galvez, Galveston, Tex.
P. A. WEATHERRED, Secy.-Counsel

GEORGIA ICE MANUFACTURERS ASSOCIATION
February 21-22, 1951
Ansley Hotel, Atlanta, Ga.
RICHARD W. FLORRID, Secretary

SOUTHERN ICE EXCHANGE
February 21-22, 1951
Ansley Hotel, Atlanta, Ga.
RICHARD W. FLORRID, Secretary

OHIO ASSOCIATION OF ICE INDUSTRIES
February 25-27, 1951
Deshler-Wallick Hotel, Columbus, O.
GUY W. JACOBS, Secretary

MICHIGAN ICE INDUSTRIES ASSOCIATION
March 1-2, 1951
Detroit Leland Hotel, Detroit, Mich.
EDWARD JACKSON, Secretary

INDIANA ASSOCIATION OF ICE INDUSTRIES
March 4-7, 1951
Lincoln Hotel, Indianapolis, Ind.
ROBT. W. WALTON, Secretary

NORTH CAROLINA ICE ASS'N.
March 12-13, 1951
Hotel Charlotte, Charlotte, N. C.
LEWIS H. POWELL, Secy.-Treas.

Watch For the

Special NARW Pre-Convention Issue

Ice and Refrigeration January, 1951

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Muriel Washburn, Secretary
1926 Silver St., Jacksonville, Fla.

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W. D. Wright, Secretary
Clinton Pure Ice Co., Clinton, Ill.

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Robert W. Walton, Secretary
Board of Trade Bldg., Indianapolis, Ind.

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C. A. Berkhiser, Secretary
Manhattan Ice & Cold Storage Co., Manhattan, Kans.

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429 S. Seventh St., Louisville, Ky.

MICHIGAN ICE INDUSTRIES ASSOCIATION
Edward W. Jackson, Secretary
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Espy Ice Co., 2229 - 15th St., Denver, Colo.

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W. T. Good Ice Co., Lincoln, Nebr.

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Capital Ice & Coal Co., Raleigh, N. C.

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Hundreds of engineers have been interviewed about their experience with the Niagara Aeropass Condenser. In one way or another, they say, "I wouldn't go back to anything else." And their managers, who watch the costs, say, "Best investment we ever made, couldn't operate now, without it."

Niagara Aeropass Condensers have three exclusive features which save trouble and money in running a refrigeration plant:

The "Duo-Pass"— keeps scale and salts from crusting the coils, keeps the condenser always at full capacity.

The "Oilout"— removes oil and dirt from the refrigerant, at the exact point where the oil vapor is condensed and the refrigerant is not.

The "Balanced-Wet-Bulb" control gives automatic operation at the minimum head pressure, saving power cost the year 'round!

In addition, the Niagara Aeropass Condenser saves nearly all your cost of cooling water, quickly bringing back to you the cost of installation. In plants where refrigeration is a production process, owners know that this condenser has reduced their costs.

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You can see one of these installations near you.

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INDUSTRIAL COOLING HEATING • DRYING
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HUMIDIFYING • AIR ENGINEERING EQUIPMENT

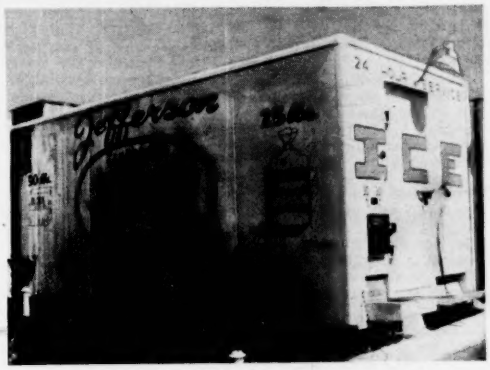
FOR *Self Service*
PROFIT ICE SALES
Consider All The

ADVANTAGES

Offered by

STURDY-BUILT

Ice Vending Stations and Vending Equipment



One of three STURDY-BUILT Ice Vending Stations recently installed by Jefferson Ice and Fuel Company of Louisville, Kentucky.

- Shipped completely assembled — ready for operation—with venders, delivery chutes and Sturdy-Built A C coin switches installed.
- Modern attractive design helps add to sales appeal of your product.
- Portable—move your product closer to customers. Select as many outlets as you want *where* you want them.
- Convenient—give customers what they want. Sell day and night.
- Sell and deliver in *one* operation — reduce costs.

Sturdy-Built name stands for dependability—lowest possible initial cost—and minimum operation and maintenance cost.

REFRIGERATED STURDY-BUILT ICE VENDING STATIONS

STURDY-BUILT

Product of F. B. Dickinson & Co.
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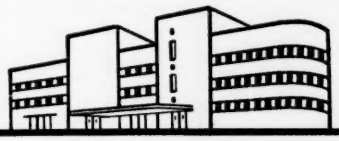
NEW PLANTS and IMPROVEMENTS



This Department each month presents the more important developments covering new constructions, as well as additions, improvements, remodeling, and installations of new equipment in ice and cold storage plants and other industrial plants that use refrigeration. News notes on all such new constructions and improvements are invited.

Arkansas

North Little Rock, Ark.—A new $100,000 plant, 85 by 100 feet, with 5,000 square feet of zero temperature, will be built at Capitol Ave. and McClain St. by Vogel's Inc., frozen foods and fish distributors here, Sam M. Vogel, president of the company announced recently.

California

Mountain View, Calif. — Durham Meat Company, Mariposa and Valla Streets, will enlarge its meat packing facilities by erecting a 40 by 50 foot addition to its plant.

Sacramento, Calif.—The City Hospital here has installed a 20 foot refrigerated S & S Depot for ice holding. National Ice Company supplies the ice.

Santa Clara, Calif.—Work on a new $400,000 cold storage plant on Martin Ave. in the Pasetta industrial tract is expected to start within two weeks, Edgar Jackson, president of the newly-formed Santa Clara Cold Storage and Freezer Co. has announced. The plant is designed to alleviate a shortage of cold storage space in this area. Facilities in the new plant will provide for 3700 tons of commodities. Processing of different frozen foods will be possible with a modern freezing unit in the structure.

Ukiah, Calif. — Ukiah Ice & Soda Works are now operating another S & S ice vending station.

Yuba City, Calif. — National Ice Company recently installed an S & S ice vending station.

Colorado

Denver, Colo.—The Colorado Ice & Cold Storage Co. has changed from coal burning to gas and oil equipment.

District of Columbia

Washington, D. C.—E. J. Read & Sons, Inc., have installed additional S & S ice vending equipment.

Florida

Dunedin, Fla.—Clinton Foods, Inc. recently installed seven Worthington 10x10 VSA ammonia compressors and 20 Worthington UCY-550 product coolers. This equipment provides refrigeration for freezing and storage of Snow Crop brand citrus concentrates.

Leesburg, Fla.—The Minute Maid Corp. has installed a Worthington Single-stage ammonia compressor, ammonia condenser, ammonia receiver, ammonia evaporator, ammonia liquid after-cooler, surge drum, oil separator and brine cooler. The system produces 261 tons of refrigeration at 40 F evaporating and 108 F condensing temperatures.

Oviedo, Fla.—The R. W. Estes plant here has installed a Worthington ammonia compressor; oil separator; condenser; receiver; float drum and surge drum. This system, producing 67 tons of refrigeration, chills water to 33 F. The water is used to pre-cool green vegetables prior to loading in refrigerated cars for shipment to market. The capacity of the plant is approximately one carload per hour.

Idaho

Lewiston, Idaho — Production of Snow Crop Marketers, Lewiston frozen food plant, will be more than doubled by an expansion program now in progress, B. J. Eldridge, national production manager, announced recently. The firm plans to enlarge its present freezing plant, and has purchased a nearby warehouse for cold storage. Production of frozen peas, carrots, and mixed vegetables will be increased from 4,500,000 pounds to 10,000,000 pounds annually. Snow Crop Marketers is a division of Clinton Foods, Inc.

Iowa

Sioux City, Ia.—Swift & Co. recently purchased another large Worthington compressor for packing house refrigeration. This machine produces 300 tons of refrigeration at 20 lbs suction and 185 lbs discharge. Buildice Co. Inc., Chicago, was the distributor.

Mexico

Ciudad del Carmen, Campeche, Mexico — Productos Refrigerados, S.A., has installed three Worthington 7x7 VSA ammonia compressors; two Worthington 24 in. x 14 ft Spiraflow condensers and one Worthington 24 in. x 16 ft receiver in their shrimp freezing and holding plant.

Michigan

Flint, Mich. — The City Products Corporation property has installed two new S & S ice vending machines for selling cubed ice.

Jackson, Mich.—A new one story building 200 x 220 ft will be used jointly by Southern Michigan prison and Michigan State Industries for warehouse and cold storage facilities.

New York

New York, N. Y.—The Holland-America Line has awarded a contract to N. V. Nederlandse Airconditioning Mij. Gebr. van Swaay, Netherlands, distributor for Carrier Corp., Syracuse, N. Y. for air-conditioning two new 15,000 ton liners, the Ryndam and the Maasdam.

New York, N. Y.—Pure Carbonic Co. has awarded contract for construction of a dry ice plant at Niagara Falls, N. Y. The new plant will have a capacity of 120 tons of dry ice per day. It is scheduled for completion in June, 1951.

Ohio

Lockland, Ohio—Valley Wine Store is now offering another customer service, selling ice 24 hours a day from S & S ice vending machines which were installed recently.

Bellefontaine, Ohio—The newly organized A. & H. Packing Co. are doing considerable remodelling to their plant including the installation of a refrigeration room and larger compressor for the freezing of meats.

Oregon

Nyssa, Ore. — H. O. Hopkins and Rolland Laurance have started operation of their new slaughter and cooling plant on Columbia Ave. The cinderblock and cement building has an aluminum roof and includes a cooler lined with aluminum. The firm has been operating here for the last nine years.

Pennsylvania

Pottsville, Pa.—A new coin operated vending machine has been installed at the plant of the Pottsville Ice Company.

Texas

Dallas, Tex.—The Pure Ice & Storage Company has been granted permission to build a loading dock along Taylor Street at Harwood.

Washington

Spokane, Wash.—Details of a million dollar expansion program at Carstens Packing Company Spokane and Tacoma plants were recently announced by E. M. Williams, general manager of the company. Main new installation at the plant here will be a giant cooler which will have walls a foot thick.

Waitsburg, Wash. — The Dumas orchard has just completed a new packing plant and cold storage facilities in time for the 1950 apple crop, according to L. F. Dumas, owner. The new cold storage room has a capacity of 35,000 boxes. The machinery and cold storage equipment was installed by the Carrier Equipment Co., Seattle.

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ARE YOU?

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Every plant and ice station should have a PICKWELL vendor.

10c mechanism		15c mechanism	
1—Only	$39.50 ea.	1—only	$44.50 ea.
2—9	37.00 ea.	2—9	42.00 ea.

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A Book Written for the Engineer

The author, a man well versed in the construction and operation of ice making and refrigerating systems, has intended this work as a practical help to the engineer in his every day problems.

PRACTICAL REFRIGERATING ENGINEERS' POCKETBOOK
By John E. Starr

eliminates algebraic terms and tells the engineer in a simple manner how to determine if his plant is operating at the highest efficiency.
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DEATHS

William W. Simmons

THE death of William W. Simmons, founder and president of the Broadway Coal & Ice Co. and a business and civic leader of Memphis, Tenn., occurred November 16 at the age of 84 years. He was active in business although for the past few months he had slowed down a bit.

Mr. Simmons founded the Broadway Coal & Ice Co., 48 years ago. During World War II he served as chairman of the Shelby County Office of Price Administrator from its creation to its end. His entire life was devoted to business and civic progress. In 1901 he resigned his position with the Chicakasaw Cooperage Co., and the following year organized the Broadway Coal & Ice Co., of which he became manager. For many years the firm has supplied the Memphis area with ice. In 1914 he built the town of Simmons, Ky., where he established the Broadway Coal Mining Co., serving as its president until 1929. At the same time the Broadway Coal & Ice Co. expanded into a network of branches. Today his two sons are officers of the company, W. W. Simmons, Jr., vice-president and general manager and Edward Dana Simmons as retail coal manager.

In spite of his widespread business interests, Mr. Simmons had time to devote to civic activities. He was a Scottish Rite Mason and a chairman and past-president of the Tennessee Club and Memphis Hardware Exchange; past vice-president of the Memphis Country Club and director of the Elmwood Cemetery and a member of the Chamber of Commerce, Rotary Club, and Y.M.C.A. He was a member of the Methodist church.

Peter J. Marion

THE death of Peter J. Marion, former owner of the Batavia Pure Ice & Storage Co., Batavia, N. Y., occurred October 24. He was 78 years old. Mr. Marion became secretary, treasurer and manager of the ice and storage company in 1919 and was connected with the business until 1939 when he sold his interest and retired.

LYNN KILBOURN of Panama City, Fla., died recently at the age of 74 years. He had three sons, all in the ice business. Mr. Kilbourn started operating his first ice plant in Carrabelle, Fla. in 1903 and was actively engaged in the ice and fish business until a few years before his death. The three sons, all of whom survive, are J. F. Kilbourn and Max Kilbourn, Panama City, and G. N. Kilbourn, Carrabelle.

John Francis Roche

J. F. ROCHE, chairman of the board of the Binks Manufacturing Co. died October 15, 1950. Mr. Roche joined the Binks organization as executive vice-president and member of the board of directors in January, 1929. In 1936 he was elected president of the Binks Manufacturing

J. F. Roche

Co. in appreciation of the splendid job he had done in the re-organization of the firm under difficult conditions. Under his guidance Binks products improved and were standardized, and the manufacturing facilities were modernized and expanded. In April 1949, he became chairman of the board of directors. His son, Burke B. Roche, became president, to carry on the work started by his father.

Lewis W. Denney

THE death of Lewis W. Denney, an employee of the Diamond Ice & Coal Co., Wilmington, Del., for the last ten years, occurred October 17. He was stricken with a cerebral hemorrhage at the office. He was 58 years old. A life-long resident of Wilmington, Mr. Denney had been in the ice and coal business for many years before going with the Diamond Ice & Coal Co. Surviving are his widow, Mrs. Myrtle Denney, and a daughter, Mrs. Marian Frederickson of Decatur, Ill.

JULIUS S. HOLL, advertising manager of Link Belt Company for almost forty years, died at the Presbyterian Hospital, Chicago, October 24. His death followed a prolonged illness.

JOHN L. DOENGES for many years associated with his brother Simon Doenges in the Connersville Ice Company, Connersville, Ind., died recently. He was 87 years old. Death followed a year's illness.

LEONARD GOEBEL, retired superintendent of the Hyde Park branch of the City Ice & Fuel Co., Cincinnati, O., died November 4 at the age of 74 years. He had been superintendent of the ice company branch for 47 years before he retired three years ago.

EARLE C. GRASS, chief operator at the Central Power & Light Company ice plant, Edcouch, Tex., died September 29 in Mercedes Hospital. He had been a resident of Edcouch since

Sales and Reorganizations

Reidsville, Ga.—It was announced recently that D. L. Durrence, Segal Durrence and Earl Kennedy have purchased the Reidsville Ice Company from Paul House of Lyons.

Moberly, Mo. — At a stockholders meeting of the Moberly Artificial Ice Company, the ice plant, including equipment, and other buildings at 325 Franklin Street were sold to the F. M. Stamper Company, for $65,000. The Moberly Artificial Ice Company will discontinue its ice business December 30 and the F. M. Stamper Company will take possession of the plant next January 1 and will convert the plant into a cold storage warehouse for its poultry, egg and dairy products.

New York, N. Y.—The American Ice Company has sold its former repair shop and plant at 1329 Willoughby Avenue, Brooklyn, to the McPhilben Manufacturing Company, maker of specially designed lighting fixtures. The property, 240 by 100 feet, was acquired for cash above a mortgage of $60,000.

San Carlos, Tex.—The freezing and canning plant of the Lone Star-International Company here has been sold to E. C. Christensen of Weslaco, Tex., by sons of Hermann Lodge for $180,000, it was announced recently.

Fires and Accidents

Hazelton, Pa.—A fire recently at the Hazle Milk and Ice Cream Co. here caused damage of about $15,000 to dairy equipment.

Kulpmont, Pa.—A fire occurred in the plant of the Kulpmont Ice Company, Sixth and Scott Streets, caused by sparks from an acetelyne torch that was being used to remove pipes from the building.

New Incorporations

Dunn, N. C.—Dunn Ice and Fuel Co. has been incorporated to engage in the business of manufacturing ice. Authorized capital stock $100,000, subscribed stock $300 by A. C. Barnes, Earl Westbrook and Elizabeth Burns, all of Dunn.

Dumas, Tex.—The Dumas Ice and Storage Co. here was chartered with $20,000 capital stock by Charles Doyle, E. R. Bauman and Christine Bauman.

Gatesville, Tex. — The City Ice Company was chartered by Crawford Scott, Ethel Ruth Scott and C. E. Alvis, Jr., with $36,000 capital stock.

Icy Item

Riverhead, New York — Articles were filed with the office of the secretary of state at Albany, New York recently for Longisland Ice Corporation, changing the name to Long Island Ice and Fuel Corporation.

JOE O. DUSEK, office manager for Merchants Cold Storage Co., Ft. Worth, Tex., died of a heart ailment November 10. Mr. Dusek has been in the employ of the Merchants Company since 1943. He was 35 years old.

Steam Baked Reliable TRADE MARK Corkboard

- 30 years serving the Refrigeration, Cold Storage, Meat Packing Industries, and Ice Plants.
- Prompt shipments anywhere
- Your inquiries invited!

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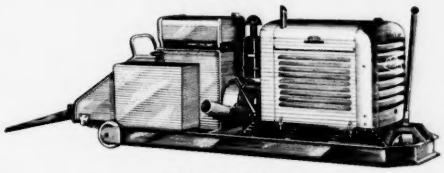
DISTRIBUTORS WANTED

CRUSHED ICE ANYWHERE

Capacity: 6 whole 300 lb. blocks per minute!



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Tri-Pak Ice Crusher-Slinger

Power packed for speed and capacity delivery, Tri-Pak's new gasoline Crusher-Slinger crushes and delivers *1800 pounds of ice every 60 seconds!*

Complete self-contained, this Crusher-Slinger unit can be moved easily and quickly on its rubber-tired ball bearing wheels. A heavy "X" type frame of welded channel steel gives rigid support to the loading ramps, the crusher, the slinger and the Ford Industrial Power Unit.

Variable twin ice feeder chains give positive feed of ice blocks into the crusher. A master clutch permits the engine to idle when not in actual use. Crusher drum and impeller wheel are dynamically and statically balanced for smooth operation.

Write or phone TODAY for complete information about Tri-Pak's gasoline or electric Crusher-Slingers, or Tri-Pak's full line of icing equipment.

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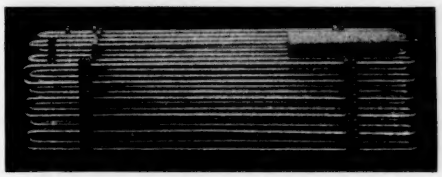
Whether your next job be for a single bend, or coil or complete piping system, Chicago Nipple can supply your requirements. Experienced workmen, practical engineers, and modern equipment reflect the quality of our products.



Coils are of selected ammonia pipe—all joints are electrically welded—checked under water with an air pressure of 300 pounds to guarantee tightness.

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What's New

MACHINERY
APPLIANCES • PROCESSES

Single Tank Deionizer

WATER demineralizing equipment which has only one exchanger tank is being made by the Elgin Softener Corp., Elgin, Ill. Several advantages are claimed by the manufacturers for this type of equipment. Using single-tank rather than multiple-tank equipment, the investment cost for this new type deionizer is considerably lower; higher quality water is produced more simply; water of uniform quality is delivered even in intermittent service; minimum of space is required; less time is needed for regeneration of the ion-exchange material; and rinse requirements are reduced.

Two types of resinous zeolite exchangers are used in the deionizer; one for the positively charged ions (cations) and one for the negatively charged ions (anions). The cation exchanger is regenerated by a dilute acid solution; the anion exchanger by a caustic solution. Instead of requiring separate exchanger tanks for each exchanger as in former deionizing equipment, the two exchangers are intermixed in a single tank. These exchangers have a marked difference in density which permits them to be divided by backwash into two zones for separate regeneration as illustrated. Each regenerant solution is introduced into its proper zone. Thus, in this simplified equipment, water is deionized, the zeolite mixture separated into its components, the two resins regenerated, remixed and again returned to the deionizing cycle. Simple manipulation of a multiport valve and supplementary controls accomplish (1) Backwashing, (2) Regeneration, (3) Mixing the zeolites, (4) Return to service.

Aluminum Solder Flux

THE All-State Welding Alloys Co. Inc., White Plains, N. Y., is now marketing an aluminum solder flux that can be reactivated after drying out by the simple addition of tap water. Alcohol heretofore has been a common solvent for aluminum fluxes. This has been blamed for the short shelf life and waste that have annoyed distributors and users alike.

According to the manufacturer this new flux can be used with aluminum solder rods of any commercially available brand. It can be used with an open flame and, under certain conditions, with a soldering iron. And, it will make solder flow into the joint, thus enhancing greatly the inherent sealing and pressure-tightness qualities of the solder. It is characterized by such thorough and universal tinning action that it enables soldering aluminum to other metals, e.g. copper, steel, bronze, etc. This flux both clears the surface to be soldered and deposits a coating of a nature permitting the aluminum solder to flow and adhere.

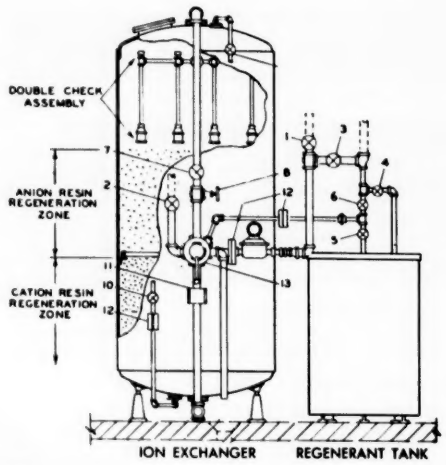
Spot Cooling Device

REQUIRING only a supply of compressed air, at a few atmospheres of pressure, the newly redesigned Hilsch Vortex Tube manufactured by Thermo Instruments Co., Belmont, Calif., will produce an air flow with sub-zero temperature. This stream can be directed by extension tubing against areas to be cooled as required.

Although application possibilities are very broad, the most common uses involve the cooling of such items as electron tubes, reference devices, optical elements, etc. Simplicity and ease of installation and control are primary advantages of the units.

In operation, the compressed air or other gas enters the tube through the perpendicular base of the tee connection, passing into a tangential entry orifice. In the resulting vortex, the energy distribution is such that with proper adjustment of the throttling valve on the long arm, the heated fraction exists there. The cooled fraction, selected from the central mass of the vortex by means of a restricting diaphragm in the other arm, emerges at this point. Maximum temperature difference is attained with the flow regulated to produce a division of approximately 70 percent hot and 30 percent cold.

Parts are chrome-plated brass assembled in tight permanent joints. Stainless steel or other metals can be supplied for corrosive or other special applications.



Diagramatic view of Elgin Deionizer (1) hard water inlet valve (2) deionized water outlet valve (3) soft water inlet valve (4) regenerant makeup valve (5) regenerant suction valve (6) regenerant rinse valve (7) upper manifold valve (8) mid-manifold valve (9) air vent valve (10) air inlet valve (11) effluent quality controller (12) rate of flow indicators (13) multiport valve.

Carrier Introduces New Ice Cube Maker

A NEW type of automatic ice maker, which delivers cubes or various grades of crushed ice, was introduced by the Carrier Corporation at a sales meeting of the Thermodyne Corporation, New York distributor for Carrier. The device's capacity is rated at 450 pounds a day, or about 8,500 cubes.

The ice cube crusher is offered as an optional feature. A turn of the knob shifts the machine to crushed ice delivered instead of cubes. The company explains that the grade of crushed ice can be controlled through several sizes from coarse to fine. The unit takes up relatively small space —24 by 25 inches with a bin storing 160 pounds, or 34 by 35 inches with one holding 240 pounds. The machine comes in white or grey enamel and is priced at $1,098 plus installation.

CATALOGS AND BULLETINS

Vilter Bulletin on New Compressors

OVER twenty features engineered into its line of multi-cylinder high speed Freon and ammonia compressors are discussed in a new bulletin published by The Vilter Manufacturing Company of Milwaukee. The bulletin, designated as Number 017, describes the application of this modern compressor, adapted for use with ammonia, to high stage or booster refrigeration service.

Featuring balanced movement and light weight automotive type pistons, Vilter Multi-Cylinder (VMC) compressors can be installed anywhere without special foundations. Even when run at speeds of 900 to 1200 RPM vibration has been reduced to an insignificant minimum. Because it is compact in design and manufacture, the VMC delivers more capacity in less space, provides the answer to crowded engine rooms where more capacity is needed and space is at a minimum.

Included in Bulletin Number 017 is a discussion of multi-stage compression and why it is superior in producing low temperatures. The VMC, of course, has proved itself completely dependable in booster or low temperature service, and, because of the rarified condition of the gas, at high rotative speeds. Anyone interested in the VMC may obtain a copy by writing to the company.

New Dow Products

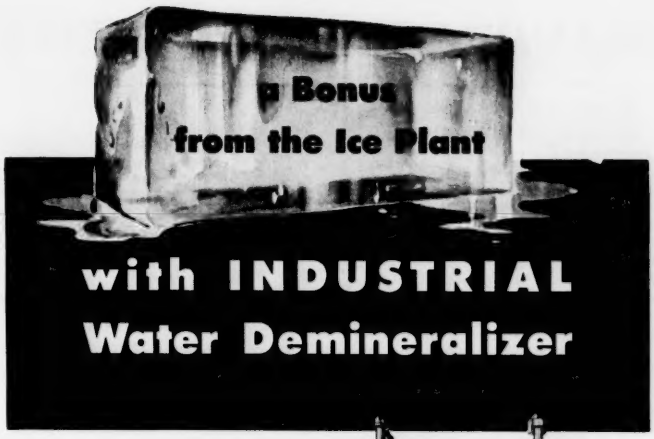
A RECENT issue of "Dowflakes" published by the Dow Chemical Co., Midland, Mich., devotes considerable space to Peladow Calcium Chloride for highway ice and dust control. Successful tests, it states, have been made in a number of cities. Representatives of the company met at Midland recently to hear technical details about the manufacturing and performance of the product. Another article describes and illustrates an Oxychloride Cement designed for floors in box cars that is said to be as nailable as wood.

Refrigerated Trucks

AN EIGHT-PAGE bulletin has been issued by The International Harvester Co., giving specifications and illustrations of multi-stop delivery trucks with refrigerated "Metro" bodies.

Installing Traps

THE installation and maintenance of steam and water taps is described in an eight-page bulletin issued by The Armstrong Machine Works. Repair parts lists are included.



A typical two-bed Industrial Water Demineralizer. Standard models available with capacities up to 1000 gph. Special units of any capacity engineered to requirements.

Here's how it works...

Instead of running ordinary city water into the freezing tanks, it is passed through the Industrial demineralizer where beds of ion-exchange resins remove the dissolved mineral salts—delivering the chemical equivalent of pure water.

With this pure water there are no minerals to deposit in the core—so the whole core-pulling operation is eliminated. Furthermore, the amount of ice which cracks in the cans is appreciably reduced. And the transparency of the whole cake is improved—your customers will notice the difference and like it.

It's easy to find out how to get this big bonus from your ice plant. Send us an analysis of the water you are using, the quantity you need, and at what rate (gallons per hour). We will send you complete information on demineralized water, estimate of costs, performance data, etc. Better look into it right away.

FILTERS Pressure Type · PUMPS Centrifugal · CORROSION TESTING APPARATUS Salt Fog • Humidity

INDUSTRIAL FILTER & PUMP MFG. CO.

5914 Ogden Avenue
Chicago 50, Illinois

RUBBER DIVISION Vulcanized Linings • Molded Products · WATER DEMINERALIZERS

MANUFACTURERS' NEWS

Foreign Travelers Tour Jamison Plant

REPRESENTATIVES from eleven of the seventeen Marshall Plan nations recently toured the plant of the Jamison Cold Storage Door Co. in Hagerstown, Md. The men are European leaders in the fields of storage, handling and transportation of perishable foods. Under the sponsorship of ECA, they were sent to observe American methods, and they will compile recommendations for the improvement of methods in food-handling industries in their native countries.

During their two-hour visit to the Jamison plant, they asked many questions on the construction and operation of the company's cold storage doors. They expect to put the information to immediate practical use when they return.

Binks Moves Into New Plant

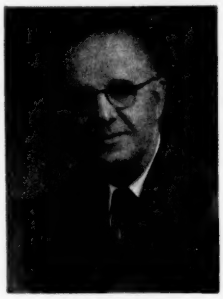
TO BETTER serve the rapidly expanding industrial west, the Binks Mfg. Co. has purchased a substantial new plant, located at 4915 Pacific Boulevard, Los Angeles. Occupancy of the new building was scheduled for the end of October.

The plant is designed for light industrial work. It will be operated under the direction of J. E. Roche, manager of the West Coast Division, covering the seven States of California, Oregon, Washington, Arizona, Utah, Nevada, and Idaho. This office will be the focal point for all branch office work involving the warehousing and selling of standard spray finishing and water cooling equipment and the assembly of air compressors. Other devices will be assembled from parts made in Chicago.

The new Binks plant plant located at 4915 Pacific Blvd., Los Angeles, Calif. Light manufacturing operations and warehousing for the Los Angeles area will be carried on here. The new plant was necessitated by the growing needs of Binks California customers.

Hanson Represents Progress

ELLIS J. HANSON is representing the Progress Refrigerator Co. in the Michigan, Wisconsin, Minnesota territory. For the past seventeen years he has been calling on the ice industry as a sales representative for equipment and supplies. Mr. Hanson will continue to maintain headquarters at La Porte, Ind.



Ellis J. Hanson

Acme Industries Names New Vice-Presidents

AT A RECENT meeting of the Board of Directors of Acme Industries, Inc., E. B. Dunphy and A. B. Newton were named as vice-presidents of the company.

E. B. Dunphy *A. B. Newton*

Before joining Acme in 1938, Mr. Dunphy was associated with General Electric. During his service with Acme, he has been in various administrative and managerial posts and was sales manager from 1942 to 1948.

Mr. Newton has been associated with the refrigeration and air conditioning industries for many years and has served in sales and engineering capacities with York Corporation, Minneapolis - Honeywell and Chrysler-Airtemp prior to joining Acme Industries.

Pure Carbonic Builds New Dry Ice Plant

CONTRACT has been awarded by Pure Carbonic Co., New York City, to Chemical Plants Division to design and construct a dry ice plant in accordance with the company's process at Niagara Falls, New York. The new plant will have a capacity of 120 tons of dry ice per day. In the process, combustible flue gas from an adjoining industrial plant will be burned in boilers to supply power for the dry ice plant and a gas of high carbon dioxide content.

DIMCO CAST ALUMINUM FIN EVAPORATING COIL

★ *Saves Space*

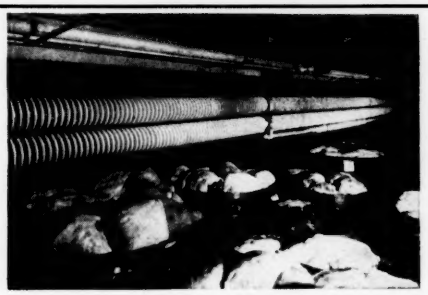
★ *Saves Weight*

★ *Saves Cost*

CAN BE USED WITH ANY REFRIGERANT
SALES AGENCIES SOLICITED

Manufactured by

DETROIT ICE MACHINE COMPANY
2615 Twelfth St., Detroit 16, Mich.



Pickled Meat Cellar
Mathew H. Klein Co., Detroit, Mich.

THE BUYERS DIRECTORY

INDEX TO ADVERTISEMENTS OF THESE FIRMS — PAGE 88

ABSORBERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

AIR AGITATING SYSTEMS AND FITTINGS
Ice Plant Equipment Co., Inc. Philadelphia, Pa.

AIR COMPRESSORS
Frick Co., Waynesboro, Pa.

AIR CONDITIONING EQUIPMENT
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc. Los Angeles, Calif.

AIR PURIFYING EQUIPMENT
General Ozone Corp., Chicago, Ill.

AMMONIA COMPRESSOR VALVES
Frick Co., Waynesboro, Pa.
Voss, Inc., J. H. H., New York, N.Y.

AMMONIA COMPRESSORS
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA CONTROL DEVICES
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.

AMMONIA FLOAT VALVES
Acme Industries, Inc., Jackson, Mich.
Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesvoro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA MANUFACTURERS
Armour Ammonia Div., Armour & Co., Chicago, Ill.
Barrett Div., The, Allied Chemical & Dye Corp., New York, N. Y.
Bower Chemical Mfg. Co., Henry, Philadelphia, Pa.

AMMONIA MASKS
Acme Protection Equipment Co., Chicago, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

AMMONIA PURIFIERS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA RECEIVERS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kehoe Machinery Co., Inc., R. F., Ridgefield Park, N. J.
National Pipe Bending Co., New Haven, Conn.
Rempe Company, Chicago, Ill.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

AMMONIA VALVES & FITTINGS
Dersch, Gesswein & Neuert, Inc. Chicago, Ill.
Shank Co., Cyrus, Chicago, Ill.

ARCHITECTS AND ENGINEERS
Greene, Van R. H., New York, N. Y.
Ophuls & Associates, Fred, New York, N. Y.

AUTOMATIC CONTROL DEVICES
Armstrong Machine Works, Three Rivers, Mich.
Frick Co., Waynesboro, Pa.
Phillips & Co., H. A., Chicago, Ill.
Rex Engineering & Sales Co., Oklahoma City, Okla.
Vilter Mfg. Co., Milwaukee, Wis.

BAGS, ICE
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Corp., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

BAGS, WATERPROOF PAPER
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Co., New York, N. Y.

BEER COOLERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BLOWERS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

BOILERS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

BOILER TUBES
Byers Co., A. M., Pittsburgh, Pa.

BOOKS—TECHNICAL
Nickerson & Collins Co., Chicago, Ill.

BRINE CIRCULATORS
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Roots-Connersville Blower Corp., Connersville, Ky.

BRINE COOLERS
Acme Industries, Inc., Jackson, Mich.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

BRINE SPRAY COOLING
Acme Industries, Inc., Jackson, Mich.
Frick Co., Waynesboro, Pa.

BRINE TREATMENT
Chemical Solvent Co., Birmingham, Ala.

(Buyers Directory continued on next page)

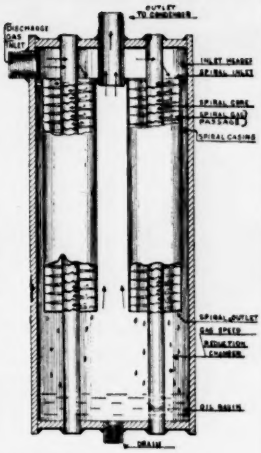
"King Zeero"

OIL SEPARATOR

STOPS OIL FROM ENTERING CONDENSER RECEIVER AND LOW SIDE

Allows operation as was originally intended. Simple in operation — no parts to wear out — no screens, metal wool or any close screens to clog, raise discharge pressures and cut down capacity.

When used in connection with air compressors, water is also separated with the oil.



Built for years of trouble free service. Mechanical details on request.

THE KING ZEERO COMPANY
1447-55 Montrose Ave., Chicago 13, Ill.

Philadelphia Pipe Coils

ESTABLISHED 1880

Continuous Welded Pipe Coils of Any Metal, Size or Design

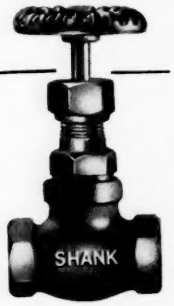
PHILADELPHIA PIPE BENDING CO.
FIFTH STREET & N. P. R. R.
PHILADELPHIA

SHANK
REFRIGERATION PRODUCTS

Recognized as The Symbol of Quality

3-WAY DUAL SHUT-OFF VALVE

For use where Refrigeration Codes require dual relief valve installations. Stainless steel stem. Indicator plate on hand wheel shows position of valve shut off. Completely rust-proofed.



SEMI-STEEL SHUT-OFF VALVE

Highest grade non-porous metal—full size ports—clean cut threads. Back seated stem—Shank design base—perfect alignment. Long life packing ring.

If your jobber doesn't stock—write

CYRUS SHANK CO.
629 W. Jackson Blvd. Chicago 6, Ill.

EVAPORATOR PRESSURE CONTROLS

AMMONIA COMPRESSORS

Wolf Linde

Est 1880

FREON VALVES UP TO 12"

AMMONIA VALVES AND FITTINGS

Manufactured and Sold by

DERSCH, GESSWEIN & NEUERT, Inc.
4849 West Grand Avenue Chicago 39, Illinois

THE BUYERS

INDEX TO ADVERTISEMENTS OF THESE FIRMS — PAGE 88

CAN DUMPS
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Reynolds Mfg. Co., Springfield, Mo.
Vogt Machine Co., Henry, Louisville, Ky.

CAR ICING EQUIPMENT
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Tri-Pak Machinery Service Inc., Harlingen, Texas

COILS
Acme Industries, Inc., Jackson, Mich.
Byers Co., A. M., Pittsburgh, Pa.
Chicago Nipple Mfg. Co., Chicago, Ill.
Creamery Package Mfg. Co., Chicago, Ill.
Detroit Ice Machine Co., Detroit, Mich.
Howe Ice Machine Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.

COLD STORAGE CONSTRUCTION
Armstrong Cork Co., Lancaster, Pa.
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

COLD STORAGE DOORS
Butcher Boy Cold Storage Door Co., Chicago, Ill.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Stge. Door Co., Hagerstown, Md.
Refrigeration Engineering Co., Montgomery, Minn.

COMPRESSOR VALVE PLATES & DISCS
Voss, Inc., J. H. H., New York, N. Y.

COMPRESSORS
(See Ice Making and Refrigerating Machinery)
(See Air Compressors)

CONDENSERS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
King-Zeero Co., Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

CONSULTING ENGINEERS
Greene, Van R. H., New York, N. Y.
Ophuls & Associates, Fred, New York, N. Y.

CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

COOLING TOWERS
Frick Co., Waynesboro, Pa.
Vilter Mfg. Co., Milwaukee, Wis.

CORK INSULATION
Armstrong Cork Co., Lancaster, Pa.
Luse-Stevenson Co., Inc., Chicago, Ill.

COUPON BOOKS
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

COVERINGS (PIPE AND BOILERS)
Armstrong Cork Co., Lancaster, Pa.

CYLINDERS (GAS & LIQUID)
Byers Co., A. M., Pittsburgh, Pa.

DEIONIZING EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

DEMINERALIZING EQUIPMENT
Industrial Filter & Pump Mfg. Co. Inc., Chicago, Ill.

DIP TANKS AND CAN BASKETS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Vogt Machine Co., Henry, Louisville, Ky.

DRIVES, TRANSMISSIONS
Frick Company, Waynesboro, Pa.

ELEVATING & CONVEYING MACHINERY
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

ENGINEERS AND ARCHITECTS
(See Architects and Engineers)

ENGINES
Frick Co., Waynesboro, Pa.

EVAPORATIVE CONDENSERS
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc., Los Angeles, Calif.

EVAPORATORS
Acme Industries, Inc., Jackson, Mich.
Creamery Package Mfg. Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Niagara Blower Co., New York, N.Y.
Refrigeration Engineering, Inc., Los Angeles, Calif.
Vogt Machine Co., Henry, Louisville, Ky.

FEED-WATER HEATERS
National Pipe Bending Co., New Haven, Conn.
Vogt Machine Co., Henry, Louisville, Ky.

FIBERGLAS
Armstrong Cork Co., Lancaster, Pa.

FIELD ICE SAWS
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

FILTERS, CLARIFYING
Industrial Filter & Pump Mfg. Co., Inc., Chicago, Ill.

FILTERS, WATER
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Industrial Filter & Pump Mfg. Co., Inc., Chicago, Ill.

(Buyers Directory continued on next page)

DIRECTORY

INDEX TO ADVERTISEMENTS OF THESE FIRMS — PAGE 88

FILTRATION EQUIPMENT
Industrial Filter & Pump Mfg. Co., Inc., Chicago, Ill.

FIN COILS
Acme Industries, Inc., Jackson, Mich.
Howe Ice Machine Co., Chicago, Ill.
Rempe Company, Chicago, Ill.

FIRST AID SUPPLIES
Acme Protection Equipment Co., Chicago, Ill.

FITTINGS
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

FOOD FREEZING EQUIPMENT
Howe Ice Machine Co., Chicago, Ill.
Vogt Machine Co., Henry, Louisville, Ky.

FROZEN FOOD LOCKERS
Knickerbocker Stamping Co., Parkersburg, W. Va.
Rempe Company, Chicago, Ill.

FUEL OIL PRE-HEATERS
National Pipe Bending Co., New Haven, Conn.

HAND TRUCKS
Ohio Galvanizing & Mfg. Co., Niles, Ohio

HOISTING APPARATUS
Capital Elevator & Mfg. Co., Columbus, Ohio
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Reynolds Mfg. Co., Springfield, Mo.

HUMIDITY AIR CONDITIONERS
Niagara Blower Co., New York, N.Y.

ICE BAGS
Union Bag & Paper Corp., New York, N. Y.

ICE BLOWERS
Gifford-Wood Co., Hudson, N. Y.

ICE CAN FILLERS
Frick Co., Waynesboro, Pa.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio
Vogt Machine Co., Henry, Louisville, Ky.

ICE CANS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Knickerbocker Stamping Co., Parkersburg, W. Va.
Ohio Galvanizing & Mfg. Co., Niles, Ohio

ICE CHIPPERS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CHUTES
Frick Co., Waynesboro, Pa.
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Jamison Cold Storage Door Co., Hagerstown, Md.

ICE CONVEYORS
Capital Elevator & Mfg. Co., Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.
Refrigeration Engineering Co., Montgomery, Minn.
United Ice & Oil Supply Co., Boston, Mass.

ICE CREAM PLANTS
Frick Co., Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

ICE CRUSHERS
Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Tri-Pak Machinery Service Inc. Harlingen, Texas
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CUBE CONTAINERS
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Co., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CUBERS
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE CUBING MACHINES
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

ICE DELIVERY BAGS
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
Union Bag & Paper Corp., New York, N. Y.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

ICE ELEVATORS AND CONVEYORS
Capital Elevator & Mfg. Co., The, Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

ICE HARVESTING MACHINERY & TOOLS
Gifford-Wood Co., Hudson, N. Y.
United Ice & Oil Supply Co., Boston, Mass.

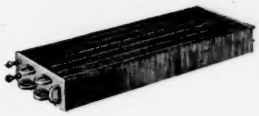
ICE MAKING AND REFRIGERATING MACHINERY
Creamery Package Mfg. Co., Chicago, Ill.
Dersch, Gesswein & Neuert, Inc., Chicago, Ill.
Detroit Ice Machine Co., Detroit, Mich.
Enterprise Equipment Corp., Yonkers, N. Y.
Frick Company, Waynesboro, Pa.
Howe Ice Machine Co., Chicago, Ill.
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
Reynolds Mfg. Co., Springfield, Mo.
Vilter Mfg. Co., Milwaukee, Wis.
Vogt Machine Co., Henry, Louisville, Ky.

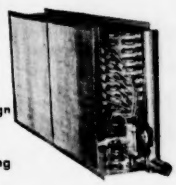
(Buyers Directory continued on next page)

for Highest Quality
LOOK TO REMPE!

PIPE COILS • FIN COILS
For Refrigeration, Air Conditioning, and Heating

Rempe Coils are accepted in the industry as quality equipment that is built for long service without maintenance. Rempe Coils are used on the most difficult jobs and forgotten. This confidence has been earned the hard way—through proper engineering, good quality materials and precision manufacturing.





Coils and Bends of any metal or design engineered to your requirements.
Send us your problems for engineering assistance.

HEAT TRANSFER EQUIPMENT REMPE CO. Founded 1890

REMPE COMPANY
348 N. Sacramento Blvd., Chicago 12, Ill.

WEATHERPROOFED ICE SIGNAL CARDS

Coated Both Sides With Paraffine

ANY COLOR

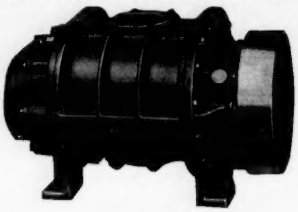
ANY SIZE

We Make Any Design of Ice Signal Card

Send In Your Individually Designed Cards for Quotation

Write for Ice Signal Card Circular and Prices

Index Coupon & Supply Co.
LaPorte, Indiana



For a Prosperous New Year

. . . INSTALL R-C BLOWERS

For replacements and for any additional capacity you need in 1951, R-C Blowers offer you these advantages:

- Ability to deliver constant and positive air volume at pressures you need
- Years of top performance . . . due to simple design and sturdy construction
- Low power cost . . . moderate speeds . . . negligible maintenance

For a dependable, economical air supply, standardize on R-C Blowers. Write us regarding your requirements, and ask for Bulletin R-C 1247.

ROOTS-CONNERSVILLE BLOWER CORP.

512 Columbia Avenue Connersville, Indiana

ROOTS-CONNERSVILLE

BLOWER BUILDERS SINCE 1854

ONE OF THE DRESSER INDUSTRIES

INCREASE YOUR PROFIT

WITH IMPROVED AUTOMATIC

LOADER SHAKER SIZER

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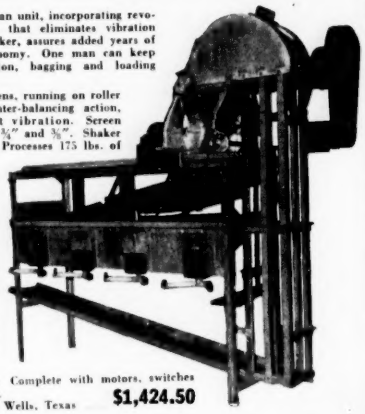

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INDEX TO ADVERTISEMENTS OF THESE FIRMS — PAGE 88

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Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
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Gifford-Wood Co., Hudson, N. Y.
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United Ice & Oil Supply Co., Boston, Mass.
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ICE PLANTS
Enterprise Equipment Corp., Yonkers, N. Y.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

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Gifford-Wood Co., Hudson, N. Y.
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Gifford-Wood Co., Hudson, N. Y.
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OIL SEPARATORS
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Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
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Philadelphia Pipe Bending Co., Philadelphia, Pa.
Rempe Company, Chicago, Ill.
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(See Coverings, Pipe and Boiler)

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Acme Industries, Inc., Jackson, Mich.
National Pipe Bending Co., New Haven, Conn.
Philadelphia Pipe Bending Co., Philadelphia, Pa.
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Acme Industries, Inc., Jackson, Mich.
Byers Co., A. M., Pittsburgh, Pa.
Frick Company, Waynesboro, Pa.
National Pipe Bending Co., New Haven, Conn.
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Ice Plant Equipment Co., Inc., Philadelphic, Pa.
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PROPELLERS
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Deming Co., The, Salem, Ohio
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Layne & Bowler, Inc., Memphis, Tenn.
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Aurora Pump Co., Aurora, Ill.
Deming Co., The, Salem, Ohio
Layne & Bowler, Inc., Memphis, Tenn.

DIRECTORY

INDEX TO ADVERTISEMENTS OF THESE FIRMS — PAGE 88

PUMPS, ROTARY
Aurora Pump Company, Aurora, Ill.
Deming Co., The, Salem, Ohio
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Roots-Connersville Blower Corp., Connersville, Ind.

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Armstrong Machine Works, Three Rivers, Mich.
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Vogt Machine Co., Henry, Louisville, Ky.

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Refrigeration Engineering Co., Montgomery, Minn.
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REFRIGERATING AND ICE MAKING MACHINERY
(See Ice Making and Refrigerating Machinery)

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Gifford-Wood Co., Hudson, N. Y.
Perfection Ice Scoring Machine Co., Fort Worth, Texas
United Ice & Oil Supply Co., Boston, Mass.

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King-Zeero Company, Chicago, Ill.
National Pipe Bending Co., New Haven, Conn.
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Vogt Machine Co., Henry, Louisville, Ky.

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Gifford-Wood Co., Hudson, N. Y.
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

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Bateman Foundry & Machine Co., Inc., Mineral Wells, Texas
Gifford-Wood Co., Hudson, N. Y.
Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Vivian Mfg. Co., St. Louis, Mo.

SPRAY NOZZLES
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

SPRAY PONDS
Frick Company, Waynesboro, Pa.

STORAGE HEATERS
National Pipe Bending Co., New Haven, Conn.

STRAINERS
Ice Plant Equipment Co., Inc., Philadelphia, Pa.

TANKS
Frick Company, Waynesboro, Pa.
Vogt Machine Co., Henry, Louisville, Ky.

TARPAULINS
Ice Plant Equipment Co., Inc. Philadelphia, Pa.
Index Coupon & Supply Co., La Porte, Ind.
United Ice & Oil Supply Co., Boston, Mass.
Vivian Mfg. Co., St. Louis, Mo.

THERMOMETERS
Ice Plant Equipment Co., Inc. Philadelphia, Pa.

TIERING MACHINES
Capital Elevator & Mfg. Co., The, Columbus, Ohio
Gifford-Wood Co., Hudson, N. Y.

TRAPS, OIL & STEAM
Armstrong Machine Works, Three Rivers, Mich.

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Howe Ice Machine Co., Chicago, Ill.
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Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.

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Ice Plant Equipment Co., Inc., Philadelphia, Pa.
Kehoe Machinery Co., Inc., R. P., Ridgefield Park, N. J.
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Compressors With or Without Motors

	Item No.
1—4x4 York, 300 RPM	16
6—6x6 York's, 200 RPM	20
1—6x6 Frick, 257 RPM	21
2—6x6 York's, 400 RPM, forced-feed lubrication	25
2—6½x6½ Arctics, 350 RPM, forced feed lub.	30
1—7¼x7¼ Baker, 350 RPM, forced feed lubrication	35
1—7x7 Frick, 200 RPM	40
1—7½x7½ York, 200 RPM	51
2—7½x7½ Yorks, 350 RPM, forced-feed lubrication	54
1—7½x7½ York, 400 RPM, forced-feed lub. Late Type	55
1—8x8 Frick, 400 RPM forced feed lub. V-belt wheel	57
1—8x8 York, 400 RPM, forced feed lub., V-belt wheel	58
1—9x9 Arctic, 300 RPM, forced feed lub.	62
1—9x9 York, 200 RPM	71
1—9x9 Worthington, 325 RPM, forced feed lub.	72
1—10x10 De La Vergne, 360 RPM, forced feed lub.	73
1—10x10 York, 257 RPM, forced feed lub.	80
1—10x10 Carbondale, 100 HP synch. motor, 350 RPM	81
3—10x10 York's, 225 RPM, semi-forced feed lub.	82
1—11x13 York, 164 RPM, forced feed lub.	90
2—12x12 Frick, direct conn. 150 HP synch. motor	98
Diesel Driven and Diesel Engines	
1—8x8 York—Direct connected to 50 HP Fairbanks-Morse at 257 RPM	210
Steam Driven	
1—8x8 Vertical York, 300 RPM direct connected	327
Pipe	
10,000 feet wrought Iron pipe—2"—like new	451
Complete Ice Plants	
1—15-ton electric driven plant	630
1—600 Can Trunk Coil Type—York Plant, Brand New Tank. *Complete with 10 Can Grids. This plant is equal to new*	631
Brand New 8 to 10-ton Clear Ice-Making Plants—110 Cans—Electric or Diesel Drive—2 Can Pull	632
1—*247 Can, 22-ton ice plants, like new*	632A
1—35-38 ton New Clear Ice Making Plants	635
1—150 Ton Multi lift—1622 Can Plant	636
1—702 Can Plant—9 Can Pull	637
1—920 Can Plant—12 Can Pull	638
1—150 Ton Ice Plant—2 Tank	660
Traveling Cranes	
2—4 Ton Overhead Traveling Cranes. 9 & 12 Can Grid.	
Self-Contained Units	
3—4x4 York & Fricks	742
1—5x5 York—390 RPM	743
1—4½x5 Lipman—360 RPM	744
1—3x3 Worthington	748
1—5x5 Frick—Forced Feed—400 RPM Latest Type	758
Brine Coolers	
1—34x10—100—2	802
1—48"x16'—130—2" tubes	808
Condensers	
3—100 ton shell and tube condensers retubed	919
1—125-ton, Vertical Shell & Tube, 196 2" tubes	921
1—120 ton, 216—2" retubed Vertical Shell & Tube	922
2—20 ton Horizontal—retubed	924
Ice Cans	
150—11½"x22½"x44"—cap refinished in zinc	
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2000 Cans—Like new—11"x22"x47"	950
Traveling Cranes	

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FOR SALE—at sacrifice—two 30 ton York ice plants; just shut down; everything in excellent condition. Must vacate building. For further information, please write or wire Box 642, Central Y.M.C.A., Reed & Washingon Sts., Reading, Pa.

FOR SALE—18 ton ice plant. All equipment in excellent condition. New blower type condenser. One new 72 can tank; two others in good condition. 216 cans. Large industrial, oil and farming area. Owner needs rest. Inspection invited. Write for appointment. Address P.O. Box 486, Stroud, Okla.

FOR SALE—20 ton York electric plant just closed down. Complete equipment including 9x9 compressor with 50 h.p. motor V-belt drive—270-11x22x50" cans; 3 can crane and all auxiliaries in first class condition. Will consider any reasonable offer. Write or wire Pottsville Ice Company, Pottsville, Penna.

FOR SALE—Complete 100 ton plant, 1100 can 11"x22"x54". Excellent condition; with a 22 can lift, 6½ ton crane, multi-pass condensers, slow speed DeLaVergne, two 10x10 Fricks, pumps, tank coils, filling tank and vertical agitators. All electrical equipment is 25 cycle. Address Box DC-10, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

WANTED—Complete used Frick, York 300 lb. can ice plants 10 to 40 tons, 220-60-3 drive low pressure air, also high speed Frick, York ammonia compressors 4x4 to 10x10, shell-tube condensers, receivers, boosters. Only modern equipment. Give year installed, serial numbers, detailed description, price F.O.B. Prefer Illinois and West. No dealers. Address Box SP-17, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

FOR SALE—458 can ice plant. Located in South; on two national hi-ways, main street of city with population of 30,000. Natural gas driven; 4 compressors, 2—8x8 Yorks, 1—6½x6½ Baker, 1—4x4 Frick. Machinery in very good condition. Total cost for gas, water and oil less than 50c per ton, over the past three years. Other competition very agreeable. Owner in poor health. Address Box OT-9, Ice and Refrigeration, 435 N. Waller Ave., Chicago 44, Ill.

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1—9x9 Frick 250 r.p.m. FF lubrication
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FOR SALE—At sacrifice. 7½x7½ York high speed compressor with 60 h.p. V-belt drive. 10x10 York slow speed 60 h.p. V-belt. Two 50 ton vetical shell and tube condensers. 5 h.p. Allen blower. 7½ & 5 h.p. water pumps. 3-can Shepard crane. 3 h.p. agitator. New core pump. Perfection special 5 h.p. scoring machine, 2 new spare chains, 4x4 Frick self-contained with controls and 600 ft. coils. 11½x22½" cans like new $5.00, others $2.50. 800 ft. excellent 1¼" wrought iron tank coils. 3000 ft. brine coil, very good. Gifford-Wood sizing machine, S-10-3 elev. & breaker, S-13-7 Screen, used only few months. Pottsville Ice Co., Pottsville, Pa.

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1—10"x10" York ammonia compressor direct connected to 60 H.P. synchronous motor 200 R.P.M.
1—10"x10" York ammonia compressor direct connected to 100 H.P. synchronous motor 200 R.P.M.
1—9"x9" ammonia compressor direct connected to 50 H.P. synchronous motor 200 R.P.M.
1—10"x10" York ammonia compressor 200 R.P.M.
1—6"x6" Voss ammonia compressor
2—4"x4" H.S. self contained Units, York.
1—3"x3" Frick H.S. self contained units.
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1—Euclid Crane, 6 ton capacity—3 motor job.
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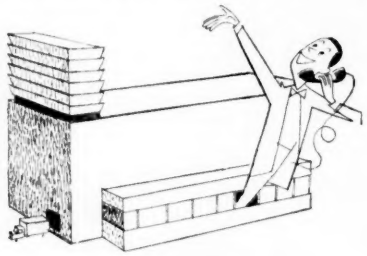
where you want it and Fast...

Armour's 65 conveniently located stock points assure you prompt delivery of Anhydrous Ammonia where you want it—when you want it—and FAST.

Armour's Anhydrous Ammonia is pure and dry, free of moisture and non-condensable gases and, to insure trouble-free operations, every cylinder is tested and checked before shipping to give positive assurance of fine quality.

Available in 50-, 100- or 150-pound cylinders.



it's always COLD

ARMOUR Ammonia Division

Armour and Company, 1355 W. 31st St., Chicago 9, Ill.

ADVERTISERS INDEX

Refer to Page 81 for Index Classified by Products

Acme Industries, Inc. ... 77
Armour & Co. ... 88
Armstrong Cork Co. ... Inside Back Cover

Bateman Foundry & Machine Co., Inc. ... 84
Bower Chemical Mfg. Co., Henry ... 75

Capital Elevator & Mfg. Co., The ... 86
Chemical Solvent Co. ... 69
Chicago Nipple Mfg. Co. ... 77
Classified Advertising ... 87
Classified Trade Index ... 81, 82, 83, 84 and 85

Deming Co., The ... 65
Detroit Ice Machine Co. ... 80
Dersh, Gesswein & Neuert, Inc. ... 82
Dickinson Co., F. B. ... 73

Electric Equipment Co. ... 87
Enterprise Equipment Corp. ... 87

Gifford-Wood Co. ... 14
Greene, Van, R. H. ... 86

Howe Ice Machine Co. ... 69

Ice Plant Equipment Co., Inc. ... 75
Index Coupon & Supply Co. ... 75 and 83
Industrial Filter and Pump Mfg. Co., Inc. ... 79

Jamison Cold Storage Door Co. ... Back Cover

Kehoe Machinery Company, Inc., Robert P. ... 85
King Zeero Co., The ... 81
Knickerbocker Stamping Co. ... 63

Layne & Bowler, Inc. ... 71
Luse-Stevenson Co., Inc. ... 77

Modern Refrigeration ... 86

National Pipe Bending Co. ... 86
Niagara Blower Co. ... 73
Nickerson & Collins Co. ... 75

Ohio Galvanizing & Mfg. Co., The ... 67
Ophuls & Associates, Fred ... 86

Pacific Lumber Co., The ... 10
Perfection Ice Scoring Machine Co. ... 71
Philadelphia Pipe Bending Co. ... 81

Refrigeration Engineering Co. ... 11
Rempe Co. ... 83
Rex Engineering & Sales Co. ... 86
Reynolds Manufacturing Co. ... 67
Roots-Connersville Blower Corp. ... 84

S & S Vending Machine Co. ... 65
Shank Co., Cyrus ... 82
Socony-Vacuum Oil Co., Inc. ... 12
Solomon & Associates, B. ... 87
Sun Oil Co. ... 6

Texas Co., The ... Inside Front Cover
Tri-Pak Machinery Service, Inc. ... 77

Union Bag & Paper Corporation ... 9
United Ice Supply Co. ... 75

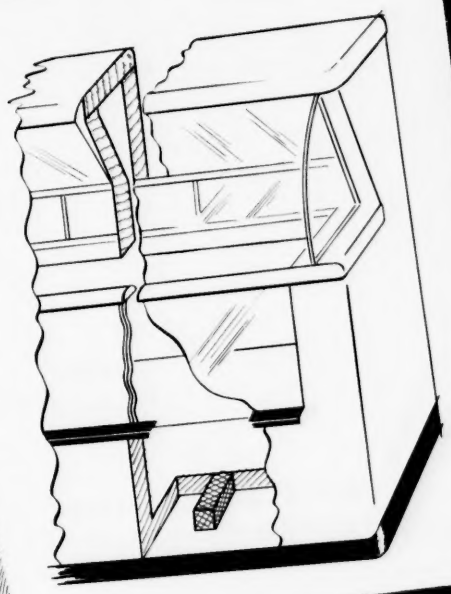
Vilter Mfg. Co. ... 5
Vivian Manufacturing Co. ... 86
Vogt Machine Co., Inc., Henry ... 8
Voss Co., Inc., J. H. H. ... 71

Wanted and For Sale Advertising ... 87

LK Corkboard has the high natural moisture resistance and rigidity needed in the superstructure, which is hard to seal against vapor.

Fiberglas has high insulating efficiency—makes possible thinner wall construction with increased storage capacity.

Strips of Temlok in the bottom support the load and insulate at the same time.



One way to get top insulating efficiency

WHAT'S THE BEST INSULATION FOR A FROZEN FOOD DISPLAY CASE?

Here is a combination of insulations that works well in one frozen food display case. The insulations were selected after studying the design of the unit, its weight, operating temperature, interior dimensions, and all other important factors. Because these factors will vary from one model to another, the design and construction of each individual model will determine the best insulation specification.

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Rigid Temlok® fiberboard is used as load-bearing strips in the floor where it insulates as well as supports.

If you are puzzled about selecting the insulations that will provide top efficiency for your equipment, why not call in an Armstrong engineer. He offers you a complete line of insulations that allows you to design the insulation as carefully as you design the rest of the equipment. He'll help you select the right materials and show you how sound his recommendations are by testing your equipment in Armstrong's Life Test Room. Several weeks in this "torture test" are equal to three to five years in actual service. For full information on Armstrong's Equipment Insulations and Life Test Service, call the Armstrong office nearest you or write to Armstrong Cork Company, 4512 Queen St., Lancaster, Penna.

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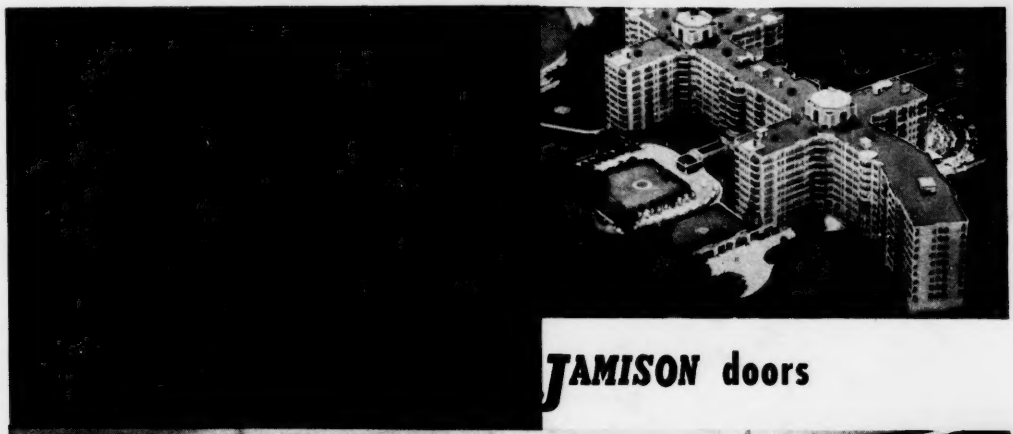
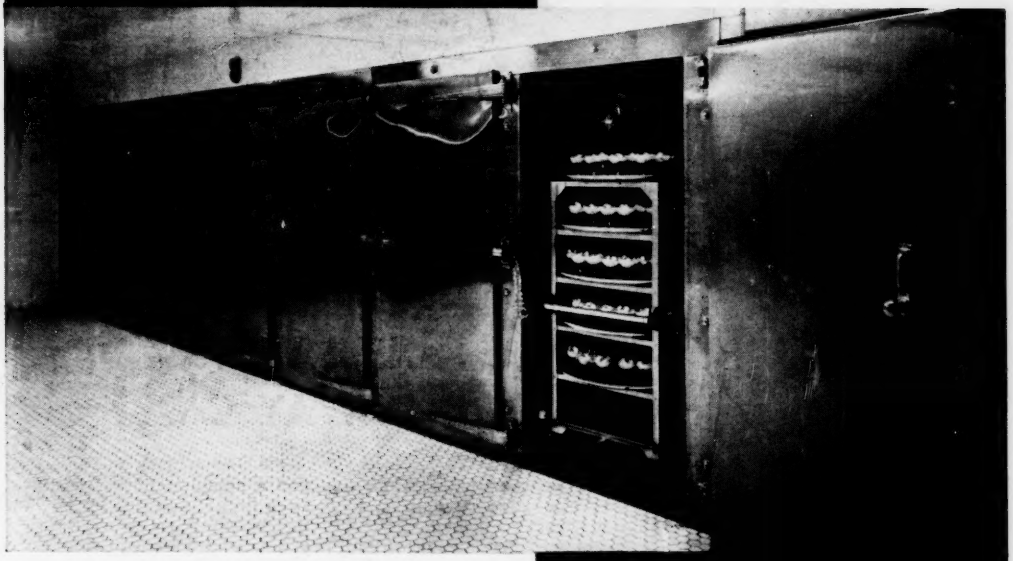


JAMISON doors



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